Wallops Flight Facility

NCAS 2009

VPP Gap Analysis Report

NASA WFF Gap Analysis for OSHA

Voluntary Protection Program (VPP) Assessment Report NCAS 2009

Table of Contents

Disclaimer- This document contains several corrections addressing typographical errors which were corrected after receipt by NASA. These corrections were limited to improper titles or spelling errors only and were corrected only to provide clarification to readers.

Introduction NASA Wallops Flight Facility VPP Gap Analysis

NCAS VPP Gap Analysis Team Analysis Dates: August 10, 2009 – October 1, 2009

Todd Miller, MS, CSP - Lead VPP Auditor

The following report is provided to NASA Wallops Flight Facility (WFF), located in Northeastern Virginia. This report includes a VPP Assessment update of the 2004 NASA WFF VPP assessment that was completed for the civil servant functions of WFF. The assessment also included a facility safety inspection of areas under NASA WFF that could be evaluated in a VPP Audit under the Civil Servant functions. The comments and recommendations provided within this report are intended for the purposes of improving OSHA compliance and achieving VPP readiness goals. This assessment is unique to NASA WFF, and was performed at the request of the WFF Code 803 – Safety Office. Completion of this assessment serves as recognition of a sincere demonstration of good faith and commitment to Health and Safety on the part NASA Wallops Flight Facility.

This assessment is a representation of what was observed, discovered and understood during the weeks of August 10, 2009 through October 1, 2009. This analysis must not be perceived or received in a manner that would hold NCAS responsible for any observation that was not discovered, undisclosed or misunderstood during the assessment period. Furthermore, the identification of deficiencies has been requested by NASA WFF to be used for their confidential private use and purposes.

Over 35 formal interviews were conducted; walkthroughs of over 25 buildings were completed; over 110 GDMSs were reviewed by the VPP Lead Auditor. The OSHA VPP management system was used as the outline for this analysis. The previous 2004 VPP assessment, employee, supervisor and management questionnaires, and VPP information available from the OSHA web page was used to assess VPP readiness. A review of procedures, documents, permits and other support information was examined for NASA WFF Civil Servant functions. Mock OSHA inspections were performed in each of the work areas to validate the quality of the safety and health programs and compliance.

The results of the Gap Analysis indicate that NASA WFF is approximately two years (or less) from achieving an OSHA VPP Star, provided that the recommendations from this analysis are completed to a high degree of quality and dedication of resources. It is agreed that this assessment is a combined effort of both NASA WFF and NCAS representatives.

Todd O. Miller, MS, CSP
NCAS Lead VPP Auditor

NASA WFF Gap Analysis for OSHA Voluntary Protection Program NCAS 2009

Background

NASA Wallops Flight Facility has been evaluated to determine the extent of VPP readiness. NASA Goddard Space Flight Center`s Wallops Flight Facility, located on Virginia`s Eastern Shore, was established in 1945 by the National Advisory Committee for Aeronautics, as a center for aeronautic research. Wallops is now NASA`s principal facility for management and implementation of suborbital research programs. The Wallops Mission Plan includes the following objectives:

- To help achieve NASA`s strategic objectives for scientific and educational excellence through cost efficient integration, launch, and operations of suborbital and small orbital payloads.
- To enable scientific, educational, and economic advancement by providing the facilities and expertise to enable frequent flight opportunities for a diverse customer base.
- To serve as a key facility for operational test, integration, and certification of NASA and commercial next-generation, low-cost orbital launch technologies.
- To pioneer productive and innovative government, industry, and academic partnerships.

The research and responsibilities of Wallops Flight Facility are centered around the philosophy of providing a fast, low cost, highly flexible and safe response to meet the needs of the United States' aerospace technology interests and science research. The 250 full-time Civil Service and 750 contractors act as a team to accomplish the mission in the spirit of this philosophy. NASA also opens its facilities to private industry for space and aeronautics research. Wallops Flight Facility expects an increase in commercial launch activities in the near future.

This Gap Analysis is limited to NASA Civil Servants. It does not include contractors, other governmental agencies or outside organizations that reside on NASA property, but operate independently of NASA. The Safety Office's plan is to use contractual emphasis on achievement of VPP with its Prime Contractors over the next 18-months. It must be noted that several findings in the report center on Prime Contractors, since they provide many services and maintain facilities for NASA Civil Servants. Prime contractors under NASA's umbrella of responsibility include:

1. Honeywell-Near-earth Network Sciences (NENS)
2. Northrop Grumman IT – NASA Sounding Rocket Contract (NSROC)
3. Lockheed Martin IT – Outsourcing Desktop Imitative for NASA (ODIN)

4. Computer Science Corp (CSC) – Wallops Engineering Service Contract
5. VT Griffin Service – Wallops Institutional Consolidated Contract (WIIC)

The above contractors will be referenced as Prime Contractors, regardless of the specific contractual arrangements. NASA is a federal agency that falls under OSHA 1960, 1910, and 1926 standards. This analysis will address all VPP responsibilities for NASA, as a Federal Agency that operates using support service contractors. The scope of this analysis will include all VPP elements and regulatory responsibilities.

Incident Rate Analysis

A review of the incident rates was not available for WFF. The following Total Case Incidence Rate (TCIR) and Days Away Restricted and Transferred (DART) rate for 2005-2007 will be needed for onsite OSHA VPP audit:

Year	Hours* *Based on 250 FTE x 2,000 hours	Total # of Cases	TCIR	Number of Cases Involving Days Away from Work, Restricted Activity or Job Transfer	DART Rate
2005	500,000	X	X.X	XX	X.X
2006	500,000	X	X.X	XX	X.X
2007	500,000	X	X.X	XX	X.X
Total	1,500,00	XX		XX	
Three-Year Rate (2005-2007)			X.X		X.X
BLS National Average for 2007 (NAICS Code XXXX)			X.X		X.X

For the period 2005-2007, the following is true for WFF:

Total Case Incidence Rate (TCIR) is X.X (XX% above/below the 2007 BLS industry averages for NAICS XXXX).

The Days Away from Work, Restricted Activity or Job Transfer (DART) case incidence rate is X.X (XX% above/below the 2007 BLS industry averages for NAICS XXXX).

A summary of occupational injuries and illnesses rates should be maintained **(Recommendation WFF 09-01)**. Federal agencies are required to collect occupational injury and illness data, analyze these d**a**ta to identify unsafe and unhealthful working conditions, and establish program priorities based on their analyses.

VVP Gap Analysis

1. Management Commitment and Employee Involvement

1.1 Commitment

The NASA headquarters are located in Washington, DC. NASA exercises management over the space flight centers, research centers, and other installations that constitute NASA. There are several OSHA VPP Star sites within NASA:

- Kennedy Space Center in Florida
- Johnson Space Center in Houston
- Ames Research Center in California
- Dryden Flight Research Center in California
- Langley Space Center in Virginia

The Safety Office Chief and the Branch Head of Institutional Safety & Mission Assurance currently leads the VPP effort with support of the Office of the Administrator. All NASA locations have been challenged to pursue a VPP OSHA Star or other Third Party recognition. NASA Wallops Flight Facility (WFF) is located in northeastern Virginia. The Facility Director has been a strong supporter of Safety at NASA WFF. The Office Safety Chief reports to the Facility Director. This Directorate has oversight of Rage Safety and Institutional Safety. The primary concern for the Branch Head of Institutional Safety has been to continuously improve the safety functions at WFF and pursue, when ready, third party recognition. This improvement has included:

- Reorganizing the S&MA team to provide oversight of critical areas and promote safety improvement and compliance.
- Providing NASA leadership opportunities to visibly support safety through their involvement in Safety Management reviews, Safety Meetings, Safety Committees.
- Conducting Safety Inspections.
- Acquiring funding and supporting a third party analysis and assessment of safety functions.
- Future contractual emphasis on achievement of VPP with its Prime Contractors.

To help ensure Prime contract compliance with NASA initiatives to pursue VPP Star recognition, a plan should be developed to place contractual emphasis on achievement of VPP with the current and future Prime Contractors including: Honeywell-Near-Earth Network Sciences (NENS), Northrop Grumman IT – NASA Sounding Rocket Contract (NSROC), Lockheed Martin IT – Outsourcing Desktop Imitative for NASA (ODIN), Computer Science Corp (CSC) – Wallops Engineering Service Contract, and VT Griffin Service – Wallops Institutional Consolidated Contract (WIIC). **(Recommendation WFF 09-02)**

1.2 Organization

The Facility Director (Code 800) is responsible for NASA WFF. The following personnel report to the Facility Director:

- Deputy Director
- Deputy Director for Business
- Resource Management Chief (code 801)
- Advanced Projects Chief (Code 802)
- Safety Office Chief (Code 803)
- Sounding Rockets Chief (Code 810)
- Balloon Program Chief (Code 820)
- Aircraft Office Chief (Code 830)
- Range and Mission Management Chief (Code 840)

The Safety and Mission Assurance Branch of the Wallops Safety Office has the responsibility and authority to administer the Health and Safety program at NASA WFF. The Branch Head for Institutional Safety reporting to the Safety Office Chief provide various levels of support for safety at NASA WFF under Code 803. The Safety Office Chief, through the Institutional Safety Branch Head, is responsible for Industrial Hygiene, Incident Database Management, Safety Training, Facility Inspection, Fire Department, Emergency Preparedness and Occupational Safety and Health.

1.3 Responsibility

Occupational Safety and Health, sometimes referred to as institutional safety, is administered by the Safety and Mission Assurance Branch of the Wallops Safety Office, Code 803. The Safety and Mission Assurance Branch implements program elements called out in GPR 1700.1 with the exception of enforcing motor vehicle rules, which is the responsibility of the Wallops Security Office, Code 240. The Safety and Mission Assurance Branch implements GPR 1800.2, Occupational Health Program, in coordination with the Safety and Environmental Division, Code 250.

Responsibilities for Safety and Health are listed in the WFF GPR 1700.1, Occupational Safety Program and GPD 8715.1B, Safety Policy. These responsibilities include the following:

Facility Director and Assistant Director

- Ensure that the safety organization is placed at a sufficiently high level and that the program implementation authority is vested in a person that has ample seniority to manage the effort, so that the safety review function can be conducted independently.
- Ensure that adequate resources are made available to support safety efforts, and that the safety responsibilities of each organizational element are properly emphasized and accomplished.
- Ensure that senior managers incorporate safety considerations into the planning and execution of programs, projects, and operations in their management function. Report, evaluate and document the safety considerations in the performance evaluations.
- Hold managers accountable for the direct safety of their workers. Ensure that supervisors incorporate measurable performance criteria in performance plans and evaluate and document results in their performance evaluations.
- Ensure no employee is subjected to restraint, interference, coercion, discrimination, or reprisal for filing a report of an unsafe or unhealthful working condition, participation in the activities of the Agency's occupational safety and health programs.

Supervisors

- Furnish a safe and healthful place of employment and ensure that identified hazards are eliminated or controlled through a rigorous proactive inspection and abatement process. Assure that a safe and healthful workplace is maintained through active coordination with and support to the designated Facility Operations Manager (FOM) and Building Manager.
- Provide site/job specific orientation safety training to ensure that employees work safely and follow prescribed workplace rules to protect themselves and fellow workers, in terms of safety and health. Inform employees of hazards associated with the workplace and ensure use of appropriate personal protective equipment (PPE).
- Ensure that NASA employees are provided safety and health training and PPE as applicable to the work environment.
- Cooperate with and assist safety and health personnel while performing duties as specified in the NASA Occupational Safety and Health (OSH) program.
- Ensure timely reporting of mishaps and close calls and timely follow up of any corrective actions; Directors will ensure that there is a written Safety Management Plan/Manual for the organizations provided to employees.
- Ensure appropriate safety and mission assurance Risk-Based Acquisition Management (R-BAM) requirements are included in procurement, design, development, fabrication, test, or operations of systems, equipment, and facilities, and will serve as a basis for awarding any fee on contracts.
- Consult Safety Office personnel in the procurement process for the acquisition of hardware, services, materials, and equipment with safety implications.
- Ensure that employees have access to information and participation in the Safety and Health Program.
- Ensure, as a minimum, that Quarterly Safety Walkthrough Audits of work areas/operations are accomplished, and that any noncompliance findings are recorded on

a tracking log. Ensure hazards are controlled and/or corrected to eliminate injury to personnel or property.
- Attend Safety and Health classes/courses when scheduled by the Safety and Human Resource Offices.
- Ensure that any matrix and/or co-located employees assigned from their organization to another host organization are provided with a safe and healthful environment. This means having direct communication with the gaining supervisor and, if required, physically assessing the new worksite for potential hazards.

Employees

- Comply with the requirements and be provided information and participation opportunities delineated in NPD 8715.1, Sections 2.4 - 2.6, and GPD 8715.1A, Section 5, and OSHA 300 log.
- Have access to inspection reports, Task Hazard Analyses of work operations, associated job safety and health documentation, and accident investigations.
- Be empowered to cease any process or operation they believe is unsafe and request analysis by a qualified individual. The qualified individual will determine the corrective actions needed (if any) and when the process or operation may be resumed.
- Attend all initial and refresher safety and health trainings, as mandated by Federal, NASA, and GSFC occupational work standards and requirements. Failure to do so, within a reasonable schedule, will result in the suspension of the employees work activities until the training is completed.
- Take necessary and appropriate actions to safely perform work.
- Act in a manner that ensures safety to self, fellow workers, astronauts, and pilots, as well as to the public, property, and environment.
- Perform activities according to proper safety, health and environmental practices and procedures as posted, instructed, and prescribed.
- Use appropriate safety protective equipment and devices.
- Promptly report unsafe conditions and/or unsafe work to their supervisors, or use established reporting systems.

A review of the responsibilities and GPR 1700.1, Occupational Safety Program and GPD 8715.1B, Safety Policy documents reveals the following:

- Health & Industrial Hygiene is not mentioned within the Center Directorate. **(Recommendation WFF 09-03)**
- The safety responsibilities in GPR 1700.1, Occupational Safety Program and GPD 8715.1B, Safety Policy vary, and should be consistent between the documents. **(Recommendation WFF 09-04)**
- Safety responsibilities for Prime Contractors are not defined. **(Recommendation WFF 09-05)** The Prime Contractor General Manager should be responsible for the following:
  1. Develop, implement and maintain compliance with all applicable governmental regulations and NASA policies and procedures.
  2. Participate in monthly Safety Management Review meetings and present the following:

   a. The status of safety and health corrective actions resulting from inspections, audits and outside agencies
   b. Injury/Illness incident rates and incident summaries
   c. VPP activities and progress
3. Support safety through staffing, resources and priorities.
4. Direct safety in the organization from the top down, to all areas of the operation.
5. Actively participate in safety-related activities and report activities to NASA on an annual basis.
6. Ensure that an annual Safety and Health review is completed on time and includes OSHA compliance status, injury/illness performance, trend analysis, accomplishments, and goals for the next year.

1.4 Accountability

Executive Safety Council

The Facility Director chairs the monthly safety management meeting established under GPR 8715.3. The Executive Safety Council provides a forum for discussion of safety and health matters and provides input to the WFF senior manager's decisions relative to occupational safety and health matters. The Safety Office (code 803) prepares the agenda and minutes of current topics for discussion, and facilitates the meeting. The meeting starts with a Chairman's report and a Hazard Awareness topic for the month such as ergonomics, and heat injuries. Mishaps, close calls, and other data pertaining to occupational safety and health are also presented; standing reports are given by representatives of the Employee Safety Committee and the Contractor Safety Council. These reports also include the status of open 30 & 60-day safety work orders. In the 30 & 60 day work order report, responsible parties for completing the open items are to be established to affix the accountability **(Recommendation WFF 09-06)**

The NASA Senior Staff are required to attend and participate in the Executive Safety Council. Membership is broad-based and includes representatives from management and employees, as well as tenant management. Membership includes:

- Director of Suborbital and Special Orbital Projects Directorate (SSOPD), Code 800
- Deputy Director of SSOPD, Code 800
- Resources Management Office, Code 801
- Policy and Business Relations Office, Code 802
- Safety Office, Code 803
- Wallops Office of Public Affairs, Code 130.4
- Assistant Director of Management Operations Directorate, Code 200
- Flight Projects Directorate, Ground Network, Code 453
- Assistant Director of Applied Engineering and Technology Directorate, Code 500
- American Federation of Government Employees (AFGE) Employee's Representative
- Wallops Contractor Safety Council Representative

There is no tracking metrics established for attendance for the Executive Safety Council **(Recommendation WFF 09-07).**

Employee Safety Committee

WFF has established an Employee Safety Committee (EmSC), which provides an assessment of the safety training, workplace inspections, Job Hazard Analyses (JHA), and input to WFF safety policies. While the Committee plays a key role in achieving the WFF safety goals, metrics have not been established to track its progress **(Recommendation WFF 09-08).** The committee also promotes employee involvement in the WFF Safety Program. Each WFF civil service organization, in addition to the American Federation of Government Employees (AFGE), the Wallops Employee Moral Association (WEMA), and the Contractor Safety Council (CSC) has a representative on the EmSC whose responsibility is to provide safety questions and concerns to the committee for discussion or resolution. The EmSC sends representatives to the Executive Safety Council to report activities, and irresolvable issues are sent to the EmSC. All civil service employees are encouraged to serve as a safety representative for their organization; however, the meeting minutes from this past year show that the attendance is sporadic, and some codes are missing the meetings. Currently, Codes 100, 600, 700, AFGE and WCSC attendance is less than 80% **(Recommendation WFF 09-09).**

Contractor Safety Council

WFF also requires participation of contractors in the WFF Contractor Safety Council (CSC). The CSC is the contractor counterpart to the EmSC. Each permanent contractor working at WFF is to be represented on the CSC; however, meeting minutes from this past year show that the attendance has been sporadic, and contractors have been absent in the meetings. Currently, the attendance for AAI Aerosonde, AirTech, BaySys, the Health Unit, Hawk Institute, and Siemens is less than 80% **(see Recommendation WFF 09-09).** The CSC reports its activities and brings safety issues for resolution to the Executive Safety Council. The CSC also has representation on the EmSC to report the activity and coordinate safety activities.

Employee Performance Reviews (EPR)

Employee performance reviews are a method used by NASA to hold individuals accountable for safety. Safety performance is one of the mandatory elements. Based on employee and supervisory interviews, safety is incorporated into the EPR system on a general basis (i.e. "maintain and safe and Healthful work environment"). The metrics for evaluation and rating associates is unclear. For VPP, it will be necessary to demonstrate that the Annual Safety Employee Performance Reviews connect to achievement of the organizational safety and health goals to incorporate specific, measurable goals **(Recommendation WFF 09-10).**

1.5 Resources

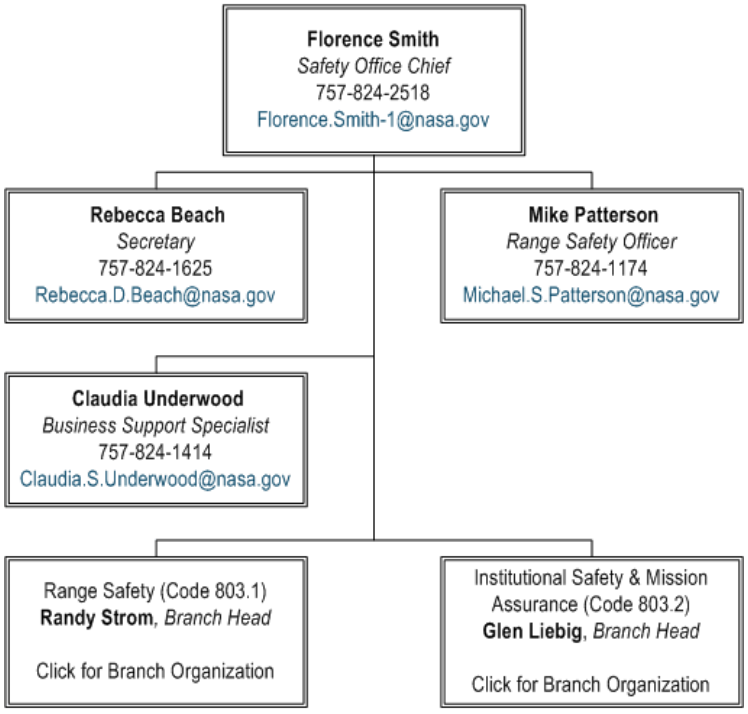
NASA provides a variety of resources to ensure that Safety and Health remain a value of the organization. These resources include the following:

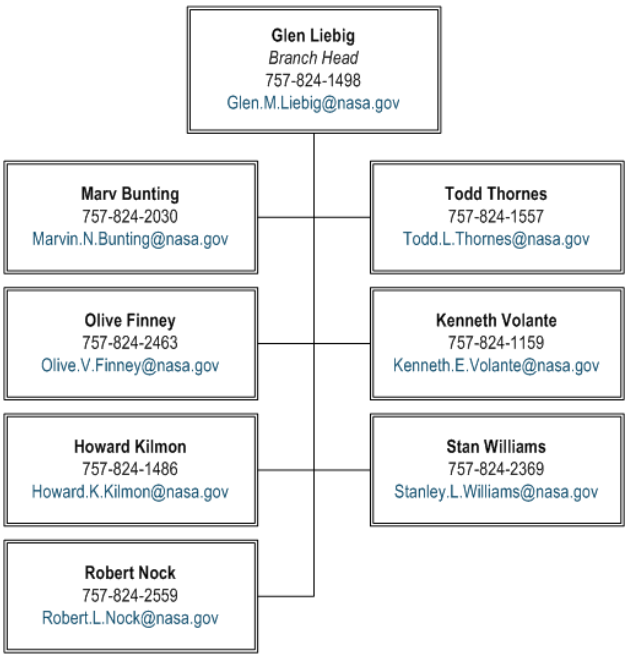
- Safety Office Chief
- Institutional Safety and Mission Assurance Branch Head
- One Safety Engineers
- Four Safety Specialists
- One Quality Specialists

Safety Contractors

- Trained and equipped Fire Department
- One Industrial Hygienist
- One Registered Nurse
- One Occupational Physician
- Contractor Safety and Health Professionals and support personnel employed by the Prime Contractors

The S&MA budget is sufficient and the contractor requirements are approved to support and supplement the S&MA mission. The amount of Safety and Health support available is acceptable, but among these resources, there is no one assigned to champion VPP within WFF. VPP has been assigned to the Branch Head and Safety Engineer, who are tasked with several duties. While these personnel can manage the effort and be the key decision maker, the work required, as stated in this Gap Analysis, will require an individual who can focus extensively on VPP readiness and assist NASA employees and Contractors for an extended period of time **(Recommendation WFF 09-11).**





1.6 Goals and Planning

NASA's Safety and Health program has been focused on and is motivated by a desire to see a reduction in lost-time and recordable injuries, and by the completion of high priority requirements that surface throughout the year. This approach falls short of VPP standards. Annual Safety goals and objectives have not been developed based on trend analysis, critical review of compliance, achievement of best practices, as well as by meaningful performance metrics. Further, there are no measurable Safety and Health goals that are shared with NASA employees and Prime Contractors, to ensure that everyone is headed toward the same direction. This gap will influence the achievement of the VPP OSHA Star status. NASA should re-evaluate what metrics are important to the organization, so that change is driven through all areas of responsibility. A review of safety program elements and compliance, along with facility audits, will be necessary for capturing systemic issues that affect performance and lead to a weakened safety culture. Investigating the best practices that can be implemented or modified to promote safe behaviors will produce quality programs and efficiency. This Gap Analysis will provide NASA with an in-depth look at NASA's safety management system. It is an example of how NASA should evaluate performance in the future and for safety excellence and ultimately for VPP **(Recommendation WFF 09-12).**

1.7 Self Evaluation

There are various forms of annual evaluations performed by NASA. The evaluations are performed to meet requirements within NASA, but have not been directed or modified to support a VPP effort. As NASA pursues VPP, it will be necessary to produce a Self Evaluation that meets the VPP requirements for Self Evaluation, and can be attached to a VPP application. This report can be used to help achieve the annual self evaluation, as it reveals the gaps affecting VPP

readiness. The analysis is missing current (2008-2009) injury/illness rates, trend analysis, 2008 accomplishments and 2010 NASA WFF Safety and Health goals **(Recommendation WFF 09-13).**

1.8 Employee Involvement

There are several opportunities for employees to be involved in the Health and Safety program at NASA. These opportunities are summarized below, and areas for improvement are also included to increase the effectiveness.

1.8.1 Employee Safety Committee – WFF has established an Employee Safety Committee (EmSC), which provides employees an opportunity to participate in the WFF Safety and Health Program. As mentioned earlier in the report, measurable goals have not been established, and metrics of effectiveness have not established for the EmSC. Also, employee attendance is tracked by Code, and some codes were found to have attendance levels of 50% **(see Recommendation WFF 09-09).**

1.8.2 Close Calls – WFF has established a Close Call reporting system is a program and Work Instruction 803-WI-8621.3.1. All employees have the opportunity to submit Close Call reports through the Quick Incident Reporting system located at http://sites.wff.nasa.gov/code803/. A close call is defined as an occurrence or a condition of employee concern in which there is no injury or only minor injury requiring first aid and no significant equipment/property damage/mission failure (less than $1000), but which possesses a potential to cause a mishap. Once reported, The Safety Office is responsible for ensuring that all mishaps, incidents, and close calls occurring at WFF are properly investigated. The initial investigation shall serve to quickly assess and bring forth all the facts and circumstances, and extent of damage surrounding the mishap, and to accurately determine the type and level of classification and notification required. The number of Close Calls submitted indicates that this program has not yet reached a point of effectiveness. More promotion and support of this process is recommended **(Recommendation WFF 09-14).**

1.8.3 Safety Awards – WFF has established an Annual Safety Award Program to acknowledge the WFF staff that demonstrates a commitment to safety. The WFF Safety Award is awarded to an individual and to a group. The awards are presented at the end of the calendar year during the Annual awards ceremony. WFF management will seek nominations for the award in November, and a form for submitting nominations will be provided upon request. The QASAR awards stands for Quality and Safety Achievement Recognition. The QASAR Award recognizes NASA or other Government, and prime/subcontractor individuals for significant quality improvements to products or services for NASA, as well as safety initiatives within products, programs, processes, and management activities.

1.8.4 Construction Safety Reviews – NASA has several processes used to promote safety within their contractors. NASA holds a Construction Safety Review meeting with contractors. The agenda of the meeting typically involves reviewing lessons learned from off-site and on-site incidents. There is also a thorough review of all of the safety findings from the previous safety inspections.

1.8.5 Safety Day – For the last several years, NASA has held a Safety Day for its employees, contractors, and other on site agencies. The Safety Day was planned through the EmSC with help from S&MA, Center Operations, and NASA employees.

1.8.6 Team and Organization Safety Meetings – Currently, NASA employees are involved in safety meetings on a greatly varying level, based on the Code or Department Head. Some heads hold regular staff meetings, and include safety on a monthly basis, while other Codes only discuss safety during staff meetings once or twice a year. Also, employees should be included in such activities as inspections, ergonomic evaluations, training and continuous improvement teams **(Recommendation WFF 09-15).** Lastly, under Safety GPR 8715.6, an annual safety awareness campaign should be conducted by the Safety and Mission Assurance Branch of the WFF Safety Office to reiterate the safety policy, goals, and objectives, and to remind supervisors and employees of their safety rights and responsibilities. The format may change, but will generally consist of "all hands" meetings and workshops focused on particular safety requirements or interest areas. **(Recommendation WFF 09-16).**

1.8.6 Performance Evaluation Survey (PEP) – The Work Center Safety Guide calls for a Performance Evaluation Profile (PEP) survey to be conducted every 12-18 months that will determine the employee perceptions of safety in each of the VPP areas. There is no indication that the PEP is being conducted on a regular basis. The data is useful for verifying success of the previous year's safety and health efforts, and for future planning. **(Recommendation WFF 09-17).**

1.9 Employee Notification

Based on employee and supervisory interviews, employee awareness of the VPP process is limited, and is in its early stages at NASA WFF. The results from this analysis will set the stage for the next steps toward VPP. NASA has several publications that often contain safety-related articles and information and could help in promoting VPP when the time comes. The Employee Safety Committee should post billboards with safety messages near the Wallops entrances. Currently, the Health Unit posts health-related information is on the bulletin board in Building F-161. Contractors post their safety policies, slogans and goals on the employee bulletin boards. All of these areas could be utilized to promote the VPP awareness campaign **(Recommendation WFF 09-18).**

1.10 Contractor Safety

While the VPP assessment was focused on Civil Servant functions, there are five major contractors that provide necessary services and support to NASA. They are:

1. Honeywell-Near-earth Network Sciences (NENS)
2. Northrop Grumman IT – NASA Sounding Rocket Contract (NSROC)
3. Lockheed Martin IT – Outsourcing Desktop Imitative for NASA (ODIN)
4. Computer Science Corp (CSC) – Wallops Engineering Service Contract
5. VT Griffin Service – Wallops Institutional Consolidated Contract (WIIC)

1.10.1 Prequalification and Selection

Contracts are awarded through the GSA process, Construction of Facilities process, Navy/NOAA Engineers, in accordance with NASA Wallops Space Center policies. Prior to the bid process, specifications are posted by the Procurement office on the procurement.nasa.gov website. These specifications in many cases are the culmination of design reviews, planning meetings and consideration of local construction requirements. Health and Safety specifications are defined in the Project/Contract, Safety, Health and Environmental Requirements and Guidelines. This guideline is distributed to each prospective bidder. The specifications for the contract are established based upon the scope of work, applicable regulations, and safety requirements of GPR 1700.1. During the selection process, contractors are given a specification package that includes health and safety requirements.

1.10.2 NASA Prime Contractors

The review process for NASA Prime Contractors is significant and the proposals are kept confidential due to legal and ethical concerns. However, the Prime Contractor selection process is more than adequate to meet VPP standards. For Prime contractors the selection and qualification review process may take a considerable amount of time and effort to complete which includes the evaluation of safety and health programs.

1.10.3 Construction

In general, the pre-approval process for all construction contractors who compete for a contract must submit a Construction Safety Program Plan that complies with NASA guidelines. All Construction Safety Program Plans are forwarded as applicable to the NASA Safety Office for review and approval. In many cases, the reviews take several weeks due to questions, requests and clarifications that are necessary to fully understand and approve the Safety Plans. Once approved, feedback is provided to the Procurement Office, which considers all other applicable needs prior to awarding a contract. If the Safety Office does approve the Contractor's Safety Plan, work can not start. At the completion of construction, the close out process of construction projects and building commissioning process seems to be significant opportunities for improvement **(Recommendation WFF 09-19).**

1.10.4 NASA Construction Subcontractors

The existing process for the selection and approval of subcontractors for construction projects is weak and varies between construction contractors. This issue needs to be addressed during the primary selection process so that it becomes a critical item of review during the selection of the Primary Contractor **(Recommendation WFF 09-20).**

2. Worksite Analysis

2.1 Baseline Industrial Hygiene Hazard Analysis

A baseline Industrial Hygiene (IH) hazard analysis that was last conducted in 2004 by Greenbelt; however, it has not been updated on a systematic basis. In accordance with the Industrial Hygiene Program, GPR 1840.2, comprehensive baseline and follow-up IH surveys shall be conducted by the IHO for all codes at GSFC to establish baseline exposure levels to occupational health hazards. Surveys of new or modified operations shall be conducted within 30 days of

receiving notification from managers or supervisors. The frequency of follow-up surveys shall correspond to the health risk assessment rating assigned by the IHO as follows:

- Operations assigned a high risk assessment rating shall receive an annual follow-up survey;
- Operations assigned a medium risk assessment rating shall receive a follow-up survey every 2 years; and
- Operations assigned a low risk assessment rating shall receive a follow-up survey every 3 years. In addition, there is no monitoring strategy for hazards in the workplace.

Responsibilities like air monitoring for IAQ or responding to employee concerns are being maintained to a degree, but the focus has been driven by the needs of the day. Although immediate IH needs are being addressed, the baseline follow-up surveys are not being completed on a regular basis or being documented. An exception to this is that exhaust hood monitoring is being conducted on an annual basis **(Recommendation WFF 09-21).**

2.1.1 Asbestos

WFF has a formal Asbestos Management Plan in place and is being managed, but improvement opportunities exist. A Phase I Asbestos Containing Material (ACM) survey was conducted for friable and damaged building systems in 2007 of 78 buildings constructed prior to 1981. Labeling from the Phase I was reportedly completed. The Phase II ACM survey was completed in March 2009 and included 47 storage and outbuildings constructed prior to 1981. The Phase II labeling of ACM has not been completed. Also, the employees do not receive training on the ACM management plan or locations of ACM **(Recommendation WFF 09-22).** Prior to completing demolition or renovation work, the WIIC contractor checks with ACM management plan.

2.1.2 Ergonomics

Currently, ergonomic assessments are being conducted on a compliant basis. Ergonomic awareness training is provided for the safety committees and made available to NASA employees. In order to meet VPP readiness requirements and comply with the Industrial Hygiene Program - GPR 1840.2, Health Hazard Evaluations (HHE) should be conducted. HHEs shall be performed to evaluate, monitor, and document civil service employee exposures to physical agents. This should include ergonomic hazard evaluations on a systematic basis. As a result of the evaluations, engineering, work practice, and administrative controls should be employed as the primary means of reducing exposure to occupational hazards **(Recommendation WFF 09-23).**

2.1.3 Lead

Lead is only identified in a pre-construction hazardous material survey or in a complaint-based survey. Lead removal projects are completed by the WIIC subcontractors if identified during the pre-construction survey. NASA employees are not likely subject to the lead exposures as precautions are taken to restrict areas where abatement is performed.

A lead management program should be established and a survey of damaged and delaminated paint be conducted. Then a database should be established showing the areas where lead-based paint could be a concern **(Recommendation WFF 09-24).**

2.1.4 Radiation Safety

The Radiation Safety program is maintained by NASA Greenbelt, which includes a Laser/Radiation Safety Committee. In addition, Radio Frequency (RF) surveys are conducted on annual basis. Based on the building walk-through, RF and ionizing radiation areas are well marked.

2.1.5 Biohazards

A baseline Industrial Hygiene (IH) hazard analysis including Biohazards was last conducted in 2004 by Greenbelt; however, it has not been updated on a systematic basis **(see Recommendation WFF 09-21).** In accordance with the Industrial Hygiene Program, GPR 1840.2, Comprehensive baseline and follow-up IH surveys shall be conducted by the IHO for all codes at GSFC to establish baseline exposure levels to occupational health hazards.

Where there are requests to investigate biohazards, the NASA IH specialist, with the assistance of the health unit, responds. In addition, the IH specialist conducts Mold monitoring and humidity testing if complaints are received. Based on the age of the buildings, the humid climate, and number of building leaks observed, systematic building inspections should include regular evaluations of mold hazards **(Recommendation WFF 09-25).**

2.1.6 Heat/Cold Stress

NASA WFF employees travel to cold weather environments on an infrequent basis. The effected employees receive cold weather training prior to departure. Conversely, there is no heat awareness training provided to employees**.** In accordance with the WFF Work Center Guide, a comprehensive baseline and follow-up IH surveys shall include evaluations for cold weather environments and heat stress **(Recommendation WFF 09-26).**

2.1.7 Other Industrial Hygiene programs

Respiratory Protection, Hazard Communication, Hearing Conservation, and Bloodborne Pathogens are discussed under Hazard Prevention and Control – Worksite Practice Controls.

2.2 Analysis of Significant Changes

The Safety Office uses a two-tier approach to accomplish the Safety Review of projects and operations. In the first tier, individual Safety Analyses, Plans, and Procedures are reviewed prior to the approval for use. Also in the second tier, the WFF RSO shall conduct “Tabletop Reviews” of new or significantly challenging operations with the Safety Team in order to assess the safety of the project across discipline boundaries.

When new processes, materials, equipment, or facilities are planned; or changes to existing activities are planned; a prior use or change in service hazard analysis must be performed. When these activities affect work centers, the supervisor shall modify an existing JHA or create a new JHA for the work to be performed. Based on employee and supervisory interviews, JHAs are not typically updated for changes in operations **(Recommendation WFF 09-27).**

2.3 Hazard Analysis of Routine Jobs, Tasks, and Processes

2.3.1 Activity Hazard Analysis

NASA - A Hazard Analysis process has been implemented for NASA civil servants on a limited basis. The primary reason is that most NASA employees are administration, management, engineering, and research personnel who do not typically work in hazardous environments. It would be hard to recommend an analysis for this group, but it would be advantageous and impressive to develop such a system. Therefore, it is suggested that NASA address the area of Hazard Analysis by developing a system that includes the NASA civil servants. NASA personnel are subject to the Prime Contractor hazard analysis process if their work requires them to perform a task in a job covered by a Job Hazard Analysis (JHA). Lastly, the hazard analyses that have been completed are not updated on an annual basis, as required by GPR 1700.1 - Occupational Safety Program **(see Recommendation WFF 09-27).**

Prime Contractors - Contractors are required to complete a written hazard analysis prior to performing any work in accordance with contractual requirements. The hazard analysis is to be available at the job site for review.

Construction - NASA requires construction contractors to complete an Activity Hazard Analysis (AHA) prior to the commencement of work activities. AHA is a process that is used to identify potential hazards of jobs/tasks and list what precautions will be taken to ensure personnel safety. NASA does not specify any particular format, but does provide examples of what must be included within the AHA.

2.3.2 PPE Assessments

See PPE Section 3 Hazard Recognition and Control.

2.4 Self Inspections

NASA - The safety office has an annual inspection process in place for the office areas occupied by NASA civil servants, but, based on the number of buildings, not all buildings are being completed each year. Deficiencies are entered into the Audit/Discrepancy Reporting System, which is an information management system that documents the actions taken to eliminate or control hazards and tracks the status of hazard resolution. Currently, the close out rate is estimated to be less than 50%. It is recommended a metric be developed for this area and reported to the Facility Director monthly **(Recommendation WFF 09-28).** The Facility Operations Managers (FOM), in accordance with GPR 7320.1A - Facility System Safety, are required to complete quarterly building safety surveys, so that the entire facility is inspected on a regular basis, and to post a copy of the most recent survey prominently in the workplace. These

FOM responsibilities are completed with varying levels of success throughout WFF **(Recommendation WFF 09-29).**

Contractors - Contractors are contractually required to perform monthly inspections of their areas. In addition, they have a Preventative/Predictive Maintenance program in place to track building systems, facilities, utilities and equipment. These inspections also include systemic inspections of pressure vessels and lifting devices.

Construction – NASA requires that inspections be performed by Construction Contractors. For large contracts, NASA requires the contractor to provide a full-time health and safety professional at the job site.

2.5 Hazard Reporting

There are three major hazard reporting systems at NASA WFF, which are outlined below. Based on the employee and supervisory interviews, not all employees are familiar with the reporting methods at WFF **(Recommendation WFF 09-30).**

2.5.1 NASA Safety Reporting System (NSRS) – The NASA Safety Reporting System has been designed for NASA employees and its Contractor employees. It is an anonymous, voluntary, and responsive reporting channel to notify NASA's upper management of safety and health concerns or about hazards. Links to this reporting system are available on the NASA WFF website. Individuals can complete an NSRS report and mail it to NASA in Bethesda, Maryland.

2.5.2 Quick Incident/Close Calls – Any Close Calls can be reported through the Quick Incident reporting system. All the information is available on the NASA WFF web page. The person reporting the Close Call completes the necessary information and can send it electronically to the NASA WFF Safety and Mission Assurance (S&MA) Office. Once a Close Call is reported, the S&MA office will send out someone to investigate. Feedback is always provided to the individual who reported the Close Call, unless no name is given.

2.5.3 Help Desk – The most common way to report hazards is to call the Help Desk, which is maintained by the WIIC contractor. Safety hazards reported will receive a high priority and be resolved in accordance with their severity. Approximately 95% of the calls are responded to in two days and emergency calls have a response time of less than two hours. Outstanding trouble calls are reviewed each month with the Executive Safety Council.

2.6 Hazard Tracking

The Audit/Discrepancy Reporting System is the primary hazard tracking system used at NASA to log and track safety action items. This information management system documents the actions taken to eliminate or control hazards and tracks the status of hazard resolution. As noted earlier, this system is underperforming. As it is being managed right now, the system does not create accountability. Report generation for open or overdue action items is a time-consuming process. For VPP, NASA will need to push for open safety items to be closed within 90 days **(see Recommendation WFF 09-28).**

2.7 Accident/Incident Investigation

The NASA IRIS reporting and data management system is the primary tool to manage injuries, illnesses, property damage, contractor incidents, mishaps, and close calls. The process is complemented by the formation of a NASA Mishap Investigation Board in accordance with GPR 8621.3B - Mishap and Close Call Investigation. The MIB works to ensure each mishap is investigated thoroughly and corrective action is taken to address the root causes. Based on a review of 60 IRIS incidents, close calls only account for approximately 50% of the incidents, which indicates an underreporting of close calls **(see Recommendation WFF 09-14).** In addition, a user guide was not available, which has created some confusion of the proper incident entry methods and practices Training for incident investigation, IRIS and root cause analysis has been performed on a limited basis. It will be necessary for NASA WFF to identify who needs this training and then schedule and complete it. Further, this training should be extended and promoted to NASA Prime Contractors **(Recommendation WFF 09-31).**

Currently, the majority of the incidents in IRIS have been open for well over 30 days. In accordance with GPR 8621.3B - Mishap and Close Call Investigation Metrics should be established to help affix accountability for completing timely and accurate investigations such as:

- Elapsed time between Mishap Investigation Board (MIB), Mishap Investigation Team (MIT), and Mishap Investigation (MI) appointment and submission of report
- Percentage of reports rejected by Appointing Official
- Percentage of Corrective Actions rejected by Safety Office
- Elapsed time between appointment of MIB, MIT, and MI and Closeout Letter signature

The timeliness of completing mishap investigation and corrective actions will have to improve for VPP readiness **(Recommendation WFF 09-32).**

2.8 Safety and Health Program Evaluation

NASA completes Safety and Health reviews. Audits are also performed by NASA Headquarters. Results of these audits are tracked until closure. The last Institutional/Facility/Operational (IFO) Audit Evaluation was performed in June 2008. NASA WFF has not completed an annual VPP Health and Safety evaluation for 2009. This Gap Analysis can be used to supplement the IFO report.

2.9 Pattern/Trend Analysis

A trend analysis of incidents is not being completed and injury rates are not being calculated. Also, analysis and trending of findings from inspections performed by NASA are not being conducted. A summary of occupational injuries and illnesses should be maintained. Federal agencies are required to collect occupational injury and illness data, analyze these data to identify unsafe and unhealthful working conditions, and establish program priorities based on their analyses **(see Recommendation WFF 09-12).**

3. Hazard Prevention and Control

3.1 Engineering Controls

NASA has implemented many engineering controls. Examples of these engineering controls include: exhaust hoods, noise reducing equipment and "Buy Quiet and Quiet By Design", local exhaust ventilation, lightning alert system, RF shielding, ergonomic wrist supports for keyboards and mouse pads, and lumbar supports on chairs. Also during the design of new facilities, engineering controls are considered for new construction. There are many examples of how NASA WFF improves safety through implementation of engineering controls. It is important to maintain examples so that they can be produced for the VPP Application **(Recommendation WFF 09-33).**

3.2 Administrative Controls

NASA has implemented many administrative controls. Examples of these administrative controls include: RF warning signs, traffic control warning signs, safety and health training, access badges required for high hazard areas, and warnings signs for high voltage areas. It is important to maintain examples so that they can be produced for the VPP Application **(see Recommendation WFF 09-34).**

3.3 Work Practice Controls

3.3.1 Safety Procedural Requirements and Handbook

WFF has a Goddard Directive Management System (GDMS) to manage official safety procedural and guidance documents, procedural regulations, and work instructions that include more than 80 safety and health documents. In addition, WFF has separate Occupational Safety & Health Manual, WOSHM-2006, and WFF Work Center Safety Guide and an Occupational Safety Program (GPR 17001.1). In order to effectively manage safety, there needs to be a hierarchical system of documents that starts with the primary Safety and Health Management document. The Work Center Safety Guide and the Occupational Safety Program (GPR 17001.1) seems redundant and should be streamlined to avoid confusion **(Recommendation WFF 09-35).** Occupational Safety Program (GPR 17001.1) explains each of the elements of the Safety and Health program and there are references to the NASA procedures that are used to manage employees and contractors**.** Support procedures (i.e. Lockout/Tagout, Industrial Hygiene, etc.) are outlined in the Occupational Safety Program and should be treated as secondary to the Safety Management System. It may benefit the entire organization and its contractors to link the Safety and Health Management system, current procedures, documents and forms to the NASA S&MA web page **(Recommendation WFF 09-36).**

3.3.2 Confined Space

The written Confined Space program (CS) at NASA WFF can be found at GPR 1700.6. – Confined Space Program. The program includes the CS policy, producers, roles/responsibilities, and Rescue methods. The Safety Office personnel maintain a list of confined spaces including

the locations of confined spaces. Based on inspections of WFF, the confined spaces were not labeled with a unique identifier that could be traced back the CS listing **(Recommendation WFF 09-37).** Also based on the interviews, the Fire Department is not completely aware of their roles and responsibilities during confined space entries. The rescue procedures are critical in the CSE process; therefore, confined space training needs to include clear descriptions of roles and responsibilities **(Recommendation WFF 09-38).**

3.3.3 Hearing Conservation

The Hearing Conservation Program is described in the NASA Hearing Conservation Program - GPR 1820. No NASA employees are included in the Hearing Conservation Program because most NASA areas are office environments. There are NASA employees who can be exposed to noise during pressure vessel testing and when walking through noisy areas; however, it is unlikely that their jobs exceed an 8-hour, time-weighted average of 80 decibels. The IH Baseline completed in 2004 did not identify any areas with a noise level above NASA's action level of 80 dBa with the exception of pressure vessel testing which is now completed by contractors. As previously recommended, the IH baseline should be updated on a regular basis. In addition, the Hearing Conservation Program should include a list of Hearing Protection-required areas **(Recommendation WFF 09-39).**

3.3.4 Respiratory Protection

NASA employees are not typically in situations or jobs where the use of respiratory protection would be required with the exception of the employees assigned to the Environmental Code. Respiratory protection is covered under Respiratory Protection Program - GPR 1820.2. The elements of a Respiratory Protection program include responsibilities; engineering, administrative, and PPE controls; selection, use, and care of respirators; medical evaluations; fit-testing; training; and IDLH situations. Employees utilizing respirators are medically evaluated on an annual basis by the Health Care Unit.

3.3.5 Hazard Communication

NASA's written Hazard Communication program is reportedly contained in GPR 1700.3 Chemical Hazard Communication Program; however, the program could not be located in GDMS. The OSHA Hazard Communication Standard requires that every covered employer adopt a comprehensive, written hazard communication program for employees. These programs describe how the employer will meet the Standard's requirement; list hazardous chemicals in each work area; describe methods to be utilized in advising employees of hazards in non-routine tasks and unlabeled pipes; and the method through which contractors in their workplace are to be informed of such hazards. The regulations require that these written programs be made available, upon request, to employees, their designed representative, and to OSHA and NIOSH **(Recommendation WFF 09-40).**

Employers must insure that containers of hazardous chemicals in their facility (except for those utilized for transfer and immediate use) be labeled or marked with the chemical's identity and appropriate hazard warning. A hazard identification system may be used instead of affixing labels to individual referenced containers that could convey the same information regarding each

stored chemical. In several areas of the facilities surveyed, transfer containers were not labeled**.** Employers are required to maintain copies of MSDS for each hazardous chemical in its workplace, and such documents are to be accessible during each shift to employees when they are in their work areas. During the survey, several areas appeared to have chemical inventories that have not been completed in the past year **(Recommendation WFF 09-41).** Workers must be trained in the methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (i.e., monitoring devices), the physical and health hazards posed by chemicals in the work area, and personal protective measures that employees can and/or shall implement. Based on interviews, many employees have not received the appropriate hazard communication training**.**

3.3.6 Electrical Safety

The Electrical Safety program described in GPR 1700.7 – Electric Safety and GPR 1700.5 – Lockout/Tagout (LOTO) is currently insufficient to fulfill the needs, requirements, and responsibilities of NASA WFF. The LOTO program shall include identification of all energy sources and machine-specific LOTO procedures **(Recommendation WFF 09-42).** Procedures must clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be used for the control of hazardous energy as well as the means to enforce compliance, including, but not limited to, the following:

- Specific statement of the intended use of the procedure.
- Specific procedural steps for shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy
- Specific procedural steps for the placement, removal and transfer of lockout devices or tag-out devices and the responsibility for them
- Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tag-out devices, and other energy control measures.

Also, the LOTO tags and a means to identify the employee performing LOTO should be standardized **(Recommendation WFF 09-43).** WFF should also include a directive on NFPA 70E, which may result in the need to secure additional resources for arc flash calculations, flash boundaries or expert electrical safety support**.** In addition, training for NASA Qualified employees should be conducted on PPE requirements based on the identified arc flash potential. Lastly, PPE requirements consistent with the arc flash potential should be prescribed in the Electrical Safety Program **(Recommendation WFF 09-44).**

3.3.7 Powered Industrial Trucks

A variety of Powered Industrial Trucks (PIT) are operated at NASA WFF; most of it is operated by NASA contractors under GPR 8719.1A - Certification and Recertification of Lifting Devices and Equipment and Its Operators and GPR 8719.9, Standard for Lifting Devices and Equipment. The training, certification of operators, and inspection of equipment is outlined in a number of different documents. The safety rules for PITs could not be located. A single program for PITs should address: safe operation of PITs; rules and regulations; PIT loading operations; safe PIT charging/fueling procedures; pedestrian safety; operator training, operator evaluations and procedures for accident/rule violations **(Recommendation WFF 09-45)**. Employees should be

encouraged to have an active role in the planning and development of the PIT program. The process for the certification of lifting devices and cranes is commendable.

3.3.8 Fall Protection

NASA WFF has limited programs and rules that cover fall protection. A fall protection program should be established and implemented. This program should provide employees and subcontractors/subcontractor employees, with the knowledge and personal protective equipment needed to protect themselves from exposures associated with working at heights. Once developed, employees and subcontractors/subcontractor employees should be trained in these practices, and policies should be strictly enforced. **(Recommendation WFF 09-46)**.

3.3.9 Bloodborne Pathogens

The Bloodborne Pathogen (BBP) procedures reside in GPR 1800.3 - Bloodborne Pathogens Exposure Control Program. Training under BBP is conducted by the Health Unit and vaccine tracking is completed by the Health Unit personnel. The program is a well written document with detailed practices. The program covers:

- Scope and Purpose
- Roles/Responsibilities
- Training
- Exposure Control Plan/Procedures
- Universal Precautions
- Exposure Determination
- Hazard Communication
- Vaccines
- Recordkeeping

3.3.10 Hot Work

WFF has limited formal Hot Work procedures, which are briefly referenced in the Wallops Safety Manual that was last updated in 2006. The program requires that the Facilities Maintenance Branch inspector be contacted to obtain a written permit from the Fire Department prior to commencing any burning welding, soldering, open flame cutting, leading operation of tar kettles, salamanders, and any other temporarily installed heat or fire producing devices. The program does not address what adequate precautionary measures are or training that has to be taken to protect personnel and property **(Recommendation WFF 09-47)**. The program requires that a permit be posted in a conspicuous location at the job site. Responsibilities for the Hot Work program is managed and maintained by the Fire Department.

3.3.11 Fire Prevention/Protection

A written Fire Prevention/Protection Plan that meets the requirements of 1910.39 has not been established for NASA buildings. At a minimum, a fire prevention plan must include:

- A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard.
- Procedures to control accumulation of flammable and combustible waste materials.
- Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.
- The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires. The name or job title of employees responsible for the control of fuel source hazards.

For VPP purposes, the Fire Prevention/Protection Plan should specify how often fire prevention and protection systems are inspected. These should include: sprinkler systems, fire alarm systems, fire extinguishers, emergency lights, fire pumps, fire dampers, fire doors, kitchen hood systems, and smoke vents. The plan should also explain where documentation can be located to demonstrate compliance **(Recommendation WFF 09-48)**.

3.3.12 Other Work Practices

NASA WFF has established many other safety work practices. These include, but are not limited to: Critical Lifts; Range Safety; Laboratory Safety; Flammable and Explosive Safety; Excavation and Trenching; Aviation Safety; Cryogenic Safety; Electrostatic Discharge Control; Pressure Systems; and Smoke Free Workplace. The overall coverage of work practices to address the risks at NASA WFF is comprehensive.

3.4 Personal Protective Equipment (PPE)

NASA WFF has numerous documents that reference PPE requirements, including PPE requirements in the JHA. However, a single program that addresses PPE requirements is not available. A PPE program should be established and implemented. This program should provide employees, subcontractors, and their employees with the knowledge and personal protective equipment needed to protect themselves from exposures associated with hazards in the workplace. Once developed, employees and subcontractors/subcontractor employees should be trained in these practices, and policies should be strictly enforced. In addition, a hazard assessment should be conducted to determine if hazards are present, or are likely to be present, which would necessitate the use of Personal Protective Equipment (PPE). This is to be accomplished on a task-by-task basis, using members of the management staff and supervisors to conduct the hazard assessment. After the hazard assessment is completed, an annual review of the PPE assessment should be conducted and documented **(Recommendation WFF 09-49)**.

3.5 Safety and Health Rules

NASA has various Safety rules that are included in the individual safety and health programs. It is recommended that these rules be gathered and placed in one document or procedure so that they can be more readily accessible and easily updated **(Recommendation WFF 09-50)**. General safety rules should, at a minimum, address all of the following issues:

- Employee accident/injury reporting responsibilities
- Employee hazard reporting responsibilities (actual and potential hazards associated with unsafe tools, equipment, materials, processes)
- Ban on the use of unsafe tools, equipment, materials, or processes
- Requirements regarding the use of safety and personal protective equipment
- Ban on horseplay in the workplace
- Material handling requirements (lifting technique, team lifts, use of Mechanical aids)
- Ban on the use of drugs and alcohol before/during working hours
- Safe driving/defensive driving
- Prohibited use of cell phones while driving
- Employee responsibility for inspection, maintenance and housekeeping of tools, equipment and the work environment (on or away from NASA premises)

Other general and specific safety rules should be developed and implemented as needed, based on the injury exposures present in NASA operations. Work safety rules should be organized such that they are easy to use and updated as needed. In addition, work safety rules should be updated and maintained to conform to current accepted safety practices and applicable government regulations. Employees should receive instruction on the content and objectives of work safety rules. Supervisors should be familiarized with their responsibilities for enforcement of work safety rules. Once implemented, the enforcement of work safety rules must be consistent and ongoing by supervisors. The development, implementation, and consistent enforcement of focused work safety rules can help you to minimize the frequency, severity, and cost of worker injury losses. In addition, it would be advantageous to explain the disciplinary process that will result in the event of any safety and health violations.

3.6 Emergency Preparedness

The WFF Safety Office is currently updating the Emergency Plan. The Plan covers fire and explosions, medical emergencies, severe weather, security, aircraft mishaps, continuing operations, launch failures/mishaps. Since the plan is in the process of being updated, recommendation will be limited to:

- The emergency escape routes, plans, and maps for each building. These should be standardized to include:
  - Identification of primary and secondary exit routes
  - Emergency evacuation procedures
  - Shelter in place procedures
  - Preferred means to report and extinguish fires
  - Phone numbers of people to be contacted for further information or assistance
- A policy should be developed on fighting incipient stage fires. If employees are expected to use extinguishers, the employees should be trained on fire extinguisher use.
- Fire drills need to be conducted and documented on an annual basis.
- The emergency alarm and sprinkler systems are maintained and tested; however, it is not inspected, tested, or maintained in accordance with NFPA 25 **(Recommendation WFF 09-51)**.

3.7 Process Safety Management

The Process Safety Management (PSM) was included in the assessment. Reportedly, the facility does not utilize regulated chemicals at or above specified threshold quantities.

3.8 Occupational Health Care Program

The WFF Health Unit provides services to nearly 250 employees of NASA and 750 Contractors. Once again, only NASA employees are within the scope of this report. The primary role of the Health Unit is Occupational Health, with emphasis on preventive medicine. The Health Unit is staffed Monday through Friday, 8:00 am – 4:30 pm, with one physician, one nurse, and one administrative assistant. Health Unit services provided to civil servants includes pre-placement physical exams, special exams required for certifications, return-to-work physicals, health maintenance physicals for managers, and travel medicine and immunizations for NASA travel in accordance with CDC guidelines. Services are provided to contractor employees as authorized by their employer.

First Aid and emergency CPR/AED are provided by Fire Department Emergency response personnel. The response time is an estimated 3-5 minutes. It is recommended that at least two civil servants per building be trained in First Aid and emergency CPR/AED to stabilize personnel until EMS arrives **(Recommendation WFF 09-52)**. Transportation to local hospitals is provided (when needed by the Fire Department) with two ambulances. If advanced life support is needed, Medivac services are used.

Drug screening is performed on a pre-placement basis for most employees. Random drug screening is conducted by Greenbelt NASA personnel. All employees with an occupational illness or injury are instructed to report to the Health Unit for First Aid. The Health Unit provides First Aid for non-occupational injuries as well.

The Health Unit promotes health through health fairs, literature, bulletin boards, and personal preventive education (during examinations), emphasizing guidelines for health maintenance. The Physician participates in the EmSC, CSC and hazard identification and analysis, as requested by NASA and contractor safety personnel. The Health Unit personnel may also participate in accident investigations.

4. Training

The Safety Office has engaged a NCAS contractor to complete an assessment of the training systems at WFF and requested that the VPP gap analysis not duplicate these efforts. Since this process is currently in progress, training recommendations in the VPP gap analysis is limited at this time. Program-specific training gaps have been identified in the above VPP assessment and recommendations have been included in the respective area of the gap analysis. For VPP, WFF will have to invest a great deal of effort to further develop safety and health training systems. Currently, training is provided in the classroom, on the web (NASA SATERN site), in the field by contractor staff, through the NASA Safety Training Center, and using a variety of vendors.

4.1 New Employees

All new employees should receive a safety orientation upon hire. A New Employee Checklist should be used to track the progress of each employee. In preparation for VPP, this area will need to be addressed so that each new NASA employee has a training plan for Safety and Health regulatory topics, as well as other necessary safety training specifically related to WFF.

4.2 Regulatory and Refresher Training

Employees receive regulatory safety training only if a need is perceived by their supervisor. Based on employee and supervisory interviews, NASA employees experience little, if any, annual or periodic safety and health training. For VPP, NASA will need to show what training is required for each position and that all required employees have successfully completed the training. The chart below can be utilized as a guide for OSHA required training:

OSHA Safety & Health
MASTER TRAINING GUIDE—29 CFR

This at-a-glance chart will help you get an overall view of your training responsibilities. The list on the following pages will give you an idea of which regulations are included in each subpart.

	1903	1904	1910 SUBPART																					1910. 1200
			A	B	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Z	HCS
Who?																							
All Employees	X	X	X		X	R					R		R										R
Select Employees Only						R	R	R	R	R		R	R	X	R	R	X	R	R	R	R	R	
Supervisors	X	X			X	R		R	R	R	R				R	R		R	R	R	R	R	R
Select Employers				X	X	X			R												R		
When?																							
First Day	X	X	X			R					R												R
Before Working Without Supervision					X		R	R		R				X	R		X	R	R	R			
Upon Assignment						R	R		R	R	R	R			R	R			R	R	R	R	
Refresher						A		A	A	A	X	X	A	X		A	X	X	A	A	X	A	
Job, Process, or Equipment Changes						R	R	R	R	R	R				R		X		R		X		R
Other				X						X	X				R								
What Kind?																							
Information	X	X	X		X	R	R	R	R	R	R	R	R	X	R	R	X	R	R	R	R	R	R
Concepts								R	R	R	R	R	R			R			R	R		R	R
Skills					X	X	R	R	R	R	R	R	R	X	R	R	X	R	R	R	R	R	R
Other				X																			
What Type?																							
Work Practice					X	X	R	R	R	R	R		R	X	R	R	X	R	R	R	R	R	R
Equipment					X	X	R		R		R		R	X	R	R	X	R	R	R	R	R	R
PPE							R	R	R	R	R		R						R	R	R	R	R
Emergency						R	R	R	R	R		R	R						R		R	R	R
Right to Know	X	X	X						R		R		R						R			R	R
Recommended	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Records																							
Dates							R		R	R	R				R	R			R				
Certification							R		R	R	R				R	R			R				
Written Plan						R	R						R									R	R

R = Required X = Recommended A = Annual

5. General Findings

5.1 Recordkeeping and Filing Systems

For VPP, it is important to ensure the records that reflect the work performed are available for review in a VPP audit. It is necessary to ensure records and documentation are preserved and protected when people move in, out, and within the S&MA group **(Recommendation WFF 09-53)**.

5.2 Posting Requirements

OSHA 1960, Basic Elements for Federal Employees, is currently not available for viewing in employee areas. Based on employee interviews, less than 25% of employees are able to explain basic elements of OSHA 1960. Once a posting is established on the S&MA web and in common areas, an explanation should be provided for NASA WFF employees, civil service, and contractors, to enable them to explain its basic elements **(Recommendation WFF 09-54)**.

5.3 VPP Readiness Matrix

The VPP readiness matrix below is a visual representation of the readiness of WFF for an onsite VPP audit. This assessment is a representation of what was observed, discovered, and understood during the weeks of August 10, 2009 thru October 1, 2009:

I Management Commitment and Employee Involvement

		WFF NASA
1	Commitment	
2	Organization	
3	Responsibility	
4	Accountability	
5	Resources	
6	Goals and Planning	
7	Self Evaluation	
8	Employee Involvement	
9	Employee Notification	
10	Contractor Safety	

II Worksite Analysis

1	Baseline Hazard Analysis	
2	Analysis of Significant Changes	
3	Hazard Analysis	
4	Self Inspections	

5	Hazard Reporting System	
6	Hazard Tracking	
7	Accident / Incident Investigation	
8	Safety and Health Program Evaluation	
9	Pattern / Trend Analysis	

III Hazard Prevention and Control

1	Engineering Controls	
2	Administrative Controls	
3	Work Practice Controls	
4	Personal Protective Equipment	
5	Safety and Health Rules	
6	Emergency Preparedness	
7	Process Safety Management	*NA*
8	Occupational Health Care	

IV Training

1	New Employee	
2	Regulatory and Refresher	

General

Key	
VPP-Ready	★
Meeting Most Expectations	
Meeting Some Expectations	
Meeting Few Expectations	
Program Development Required	

Note: Ratings are subjective

5.4 Inspection Data

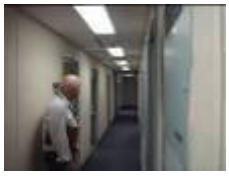
The chart below lists the number of findings resulting from the safety inspection performed by the lead auditor. Photographs have been taken of each finding to supplement the findings. The number of findings points to an opportunity to improve the Self-Inspection program at NASA WFF. Significant steps can be made toward VPP by addressing this area with increased emphasis on FOM participation and training (**see Recommendation WFF 09-29)**.

VPP GAP ANALYSIS BUILDING INSPECTIONS

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
All Locations & Buildings	Common finding throughout WFF	No sign indicating Fire Extinguisher location	1910.157(c)(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury.	
All Locations & Buildings	Common finding throughout WFF	Elevator Inspection Past Due	VA A17.1 Elevator safety Code	
All Locations & Buildings	Common finding throughout WFF	Ceiling Tiles have signs of Mold	1910.141 - Sanitation	
All Locations & Buildings	Common finding throughout WFF	Missing damaged and/or dislodged ceiling tiles negatively affects the integrity of the fire-safety system in the building. Replace any damaged or missing tiles and fix any dislodged tiles.	General Duty – Fire Prevention	
All Locations & Buildings	Common finding throughout WFF	Label non-exit doors	1910.37(b)(5) Each doorway or passage along an exit access that could be mistaken for an exit must be marked "Not an Exit" or similar designation, or be identified by a sign indicating its actual use (e.g., closet).	
All Locations & Buildings	Common finding throughout WFF	GCFI required within 6' of wet locations such as sinks and water coolers	1910.304(b)(3) Ground-fault circuit interrupter protection for personnel.	

All Locations & Buildings	Common finding throughout WFF	Sprinkler Valves not locked in the open position	NFPA 25 – Inspection of Sprinkler Systems	
All Locations & Buildings	Common finding throughout WFF	Eye wash not identified with a sign, not flushed weekly,	ANSI – Z358.1-5.4.5/7.4.5 – High visibility sign required at eye wash location ANSI – Z358.1-4.7.1/5/5/1 – Eye wash flushed weekly	
All Locations & Buildings	Common finding throughout WFF	First aid supplies expired	1910.151(b) First aid kits shall be stocked with appropriate supplies	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E107 - 01	Common finding throughout WFF	Exit aisle way is not sufficient to support safe exit in the event of an emergency	1910.36(g)(2) An exit access must be at least 28 inches (71.1 cm) wide at all points. Where there is only one exit access leading to an exit or exit discharge, the width of the exit and exit discharge must be at least equal to the width of the exit access.	
E107 - 02	Common finding throughout WFF	Temporary cord used vs. permanent outlet	1910.305(a)(2) & (g)(1) Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only as follows: During and for remodeling, maintenance, or repair of buildings, structures, or equipment, and similar activities; For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes; or For experimental or development work, and during emergencies.	 
E107 - 03	Common finding throughout WFF	Surge protectors are connected in series (Daisy chain). Potential for overload of circuit.	1910.304(b)(4)(ii)(B) Where connected to a branch circuit supplying two or more receptacles or outlets, a receptacle may not supply a total cord- and plug-connected load in excess of the maximum specified	

E107 - 04	First floor	Exit sign blocked	1910.37(b)(2) Each exit must be clearly visible and marked by a sign reading "Exit."	
E107 – 05	Common finding throughout WFF	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard	
E107 – 06	302	No box cover	1910.305(b)(2)(i) All pull boxes, junction boxes, and fittings shall be provided with covers identified for the purpose. If metal covers are used, they shall be grounded. In completed installations, each outlet box shall have a cover, faceplate, or fixture canopy. Covers of outlet boxes having holes through which flexible cord pendants pass shall be provided with bushings designed for the purpose or shall have smooth, well-rounded surfaces on which the cords may bear.	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E106 - 01	Common finding throughout WFF 111/119	Exit aisle way is not sufficient to support safe exit in the event of an emergency	1910.36(g)(2) An exit access must be at least 28 inches (71.1 cm) wide at all points. Where there is only one exit access leading to an exit or exit discharge, the width of the exit and exit discharge must be at least equal to the width of the exit access.	
E106 - 02	Stair tower	Sprinkler Valves Blocked	NFPA 25 – Inspection of Sprinkler Systems	
E106 - 03	Common finding throughout WFF 210	Surge protectors are connected in series (Daisy chain). Potential for overload of circuit.	1910.304(b)(4)(ii)(B) Where connected to a branch circuit supplying two or more receptacles or outlets, a receptacle may not supply a total cord- and plug-connected load in excess of the maximum specified	
E106 - 04	Common finding throughout WFF	Drop ceiling impeding dispersion pattern of sprinkler head	1910.159(c)(1)(i) All automatic sprinkler designs used to comply with this standard shall provide the necessary discharge patterns, densities, and water flow characteristics for complete coverage in a particular workplace or zoned subdivision of the workplace.	

E106 – 05	Common finding throughout WFF Near 314	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	
E106 – 06	302	Fire Extinguisher not mounted	1910.157(c)(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury	
E106 – 07	311	Non-factory plug	1910.304(b)(3)(ii)(C)(3) Equipment found damaged or defective shall not be used until repaired; 1910.305(g)(2)(ii) Flexible cords shall not be spliced or repaired except properly repaired cords of size 12 or larger Non-factory plug voids the UL listing	
E106 – 08	LV8 Panel	Openings in panel not covered with blank	1910.305(b)(1)(i) Conductors entering cutout boxes, cabinets, or fittings shall be protected from abrasion, and openings through which conductors enter shall be effectively closed.	
E106 – 09	Outside	No Smoking sign and Fire Extinguisher missing	1910.106 (d) (7) At least one portable fire extinguisher having a rating of not less than 12-B units must be located not less than 10 feet, nor more than 25 feet, from any Class I or Class II liquid storage area located outside of a storage room but inside a building. Open flames and smoking - Open flames and smoking shall not be permitted in flammable or combustible liquid storage areas.	
E106A-01	201	Fire Door blocked in open position	1910.36(a)(3) Openings into an exit must be limited. An exit is permitted to have only those openings necessary to allow access to the exit from occupied areas of the workplace, or to the exit discharge. An opening into an exit must be protected by a self-closing fire door that remains closed or automatically closes in an emergency upon the sounding of a fire alarm or employee alarm system. Each fire door, including its frame and hardware, must be listed or approved by a nationally recognized testing laboratory.	
E106A-02	Observation deck	Drop ceiling impeding dispersion pattern of sprinkler head	1910.159(c)(1)(i) All automatic sprinkler designs used to comply with this standard shall provide the necessary discharge patterns, densities, and water flow characteristics for complete coverage in a particular workplace or zoned subdivision of the workplace.	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E105 - 01	Library/201/203	Greater than 75" of travel to a Fire Extinguisher	1910.157(d)(2) The employer shall distribute portable fire extinguishers for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet	
E105 – 02	Entrance	Trip Hazard – missing floor mat	1910.22 – The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places should be provided where practicable.	
E105 – 03	214	Temporary cord used vs. permanent outlet	1910.305(a)(2) & (g)(1) Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only as follows: During and for remodeling, maintenance, or repair of buildings, structures, or equipment, and similar activities; For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes; or For experimental or development work, and during emergencies.	
E105 – 04	201/203	Panel blocked	1910.303 (g)(1)(i) & (h)(3)(i) Maintain a 3-4' radius around enclosures less than or equal to 600 volts or 3-12' for enclosures greater than 600 volts	
E105 – 05	201/203	Surge protectors are connected in series (Daisy chain). Potential for overload of circuit.	1910.304(b)(4)(ii)(B) Where connected to a branch circuit supplying two or more receptacles or outlets, a receptacle may not supply a total cord- and plug-connected load in excess of the maximum specified	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E104 – 01	Ice machine	Ice machine disconnect not properly labeled	1910.303(f) The identification shall be permanently posted for each disconnect.	
E104 – 02	Stair tower	Sprinkler Valves Blocked	NFPA 25 – Inspection of Sprinkler Systems	

E104 – 03	Stair tower	Temporary cord used vs. permanent outlet	1910.305(a)(2) & (g)(1) Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only as follows: During and for remodeling, maintenance, or repair of buildings, structures, or equipment, and similar activities; For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes; or For experimental or development work, and during emergencies.	
E104 – 04	Stair tower	Non-factory plug	1910.304(b)(3)(ii)(C)(3) Equipment found damaged or defective shall not be used until repaired; 1910.305(g)(2)(ii) Flexible cords shall not be spliced or repaired except properly repaired cords of size 12 or larger Non-factory plug voids the UL listing	
E104 – 05	Stair tower	Communication and 110 voltage running through same junction box	NEC / UL	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E2-01	Kitchen/Catering	No Type-K Fire extinguisher in the frying areas	NFPA 96 - The extinguishing agent contained within a K-rated extinguisher is more effective at fighting grease fires than that of a multipurpose dry chemical extinguisher, and is compatible with the extinguishing agent contained in the automatic extinguishing system. NFPA 96 states that portable fire extinguishers are a secondary backup to automatic fire-extinguishing systems. A placard identifying the use of the portable extinguisher as a secondary backup should be conspicuously placed near each extinguisher in the cooking area.	
E2-02	Kitchen/Catering	Panel Blocked	1910.303 (g)(1)(i) & (h)(3)(i) Maintain a 3-4' radius around enclosures less than or equal to 600 volts or 3-12' for enclosures greater than 600 volts	
E2-03	Kitchen	Dishwasher disconnect not labeled	1910.303(f) The identification shall be permanently posted for each disconnect.	
E2-04	Kitchen	No bloodborne pathogen Kit	1910.1030.(d)(1) – Universal precautions shall be observed to prevent contact	

E2-05	Kitchen storage	Racks not secured and under rated	1910.22(d)(1) – load limits of racking shall be posted and not exceeded	
E2-06	Kitchen Storage	Sprinkler head interference	1910.159(c)(10) The minimum vertical clearance between sprinklers and material below shall be 18 inches	
E2-07	Kitchen Line	Fan with grease and lint	1910.22(a)(1) All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.	
E2-08	Catering area	Exit door locked with no panic bar	1910.36(b)(4) – no locked mechanism to prevent escape while occupied.	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
D10-01	LV5 Panel	Panel circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	
D10-02	Cardio Room	Sprinkler head interference	1910.159(c)(10) The minimum vertical clearance between sprinklers and material below shall be 18 inches	
D10-03	Weight and Cardio Room	Greater than 75" of travel to a Fire Extinguisher	1910.157(d)(2) The employer shall distribute portable fire extinguishers for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet	
D10-04	Cardio Room	Fire Extinguisher not mounted	1910.157(c)(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E109-01	Panel R1B and P1G	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	

E109-02	1st floor shop	Guard not being utilized	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	
E109-03	1st floor shop	CNN machine no chuck guard	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	
E109-04	1st floor shop	Air for cleaning not regulated	191024(b) - To reduce the potential for injury, compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. This requirement is necessary in order to prevent a back pressure buildup in case the nozzle is obstructed or dead ended. The nozzle used for cleaning operations can include a Pressure Reducer or a relief device which will reduce the air pressure to less than 30 psi if the nozzle is obstructed. In addition, cleaning with compressed air shall only be completed with effective chip guarding and personal protective equipment. Compressed air shall not be used to clean off personnel.	
E109-05	1st floor shop	Grinder toll rest and tongue guard	The table grinders in the shop area must be equipped with a tool rest and tongue guard. The maximum distance between the tool rest and grinding wheel is 1/8 inch. The OSHA 1910.215 requirement (Abrasive Wheel Machinery) states, "On offhand grinding machines, work rests shall be used to support the work. They shall be of rigid construction and designed to be adjustable to compensate for wheel wear. Work rests shall be kept adjusted closely to the wheel with a maximum opening of one-eighth inch to prevent the work from being jammed between the wheel and the rest, which may cause wheel breakage. The work rest shall be securely clamped after each adjustment. The adjustment shall not be made with the wheel in motion.	
E109-06	1st floor shop	CKT Panel Damaged	1910.303(b)(7)(iv) There shall be no damaged parts that may adversely affect safe operation or mechanical strength of the equipment, such as parts that are broken, bent, cut, or deteriorated by corrosion, chemical action, or overheating.	
E109-07	1st floor shop	Unguarded band saw blade	1910.213(i) all portions of the blade shall be guarded except for the working portion of the blade	
E109-08	1st floor shop	No chuck guard on drill press	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as	

			those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	
E109-09	153 & 2nd floor kitchen entrance	Fire Door blocked in open position	1910.36(a)(3) Openings into an exit must be limited. An exit is permitted to have only those openings necessary to allow access to the exit from occupied areas of the workplace, or to the exit discharge. An opening into an exit must be protected by a self-closing fire door that remains closed or automatically closes in an emergency upon the sounding of a fire alarm or employee alarm system. Each fire door, including its frame and hardware, must be listed or approved by a nationally recognized testing laboratory.	 
E109-10	1st floor shop	Eyewash does not meet ANSI standards	ANSI Z358.1 - The equipment shall be capable of delivering not less than 0.4 gallons per minute for 15 minutes.	
E109-11	1st floor shop	Lifting device not inspected	GDMS - No Recert tag observed for lift	
E109-12	Conference Room	Temporary cord used vs. permanent outlet	1910.305(a)(2) & (g)(1) Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only as follows: During and for remodeling, maintenance, or repair of buildings, structures, or equipment, and similar activities; For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes; or For experimental or development work, and during emergencies.	

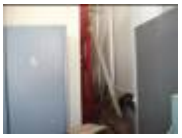
Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
F5-01	Panel LV1-2-1	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	
F4-01	Panel LA	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	

				
F4-02	Housekeeping – VT Griffin	Safety Glasses not used while using cleaning supplies	1910.132 - Eye and face protection meeting the ANSI Z87.1 (appropriate for the hazard or potential hazard) shall be worn by all affected employees when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gasses or vapors, or potential injurious radiation	
F6-01	2nd floor hall	Temporary cord used vs. permanent outlet	1910.305(a)(2) & (g)(1) Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only as follows: During and for remodeling, maintenance, or repair of buildings, structures, or equipment, and similar activities; For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes; or For experimental or development work, and during emergencies.	
F2-01	119	Soldering without a hood and outside Lab	1910.100 (e) Hood or local ventilation should be provided to reduce air contaminants	
F1-01	107	No box cover	1910.305(b)(2)(i) All pull boxes, junction boxes, and fittings shall be provided with covers identified for the purpose. If metal covers are used, they shall be grounded. In completed installations, each outlet box shall have a cover, faceplate, or fixture canopy. Covers of outlet boxes having holes through which flexible cord pendants pass shall be provided with bushings designed for the purpose or shall have smooth, well-rounded surfaces on which the cords may bear.	
F1-02	Reproduction Area	Hole punch machine, EH3 Machine, and Stapler Guarding	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	  

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
F160-01	E116/C124	Cylinders secured with nylon strap	BMP - Cylinders should be secure with a non-combustible material	
F160-02	EPA Panel	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	
F160-03	E113 & C129	Hot and Neutral wiring reversed on power strip	1910.304(a)(2) – Polarity of the hot and neutral legs are reversed	 
F160-04	E113	Electrical note rated for Class I Division II locations due to flammable gas	1910.307(c)(3) Safe for the hazardous (classified) location. Equipment that is safe for the location shall be of a type and design that the employer demonstrates will provide protection from the hazards arising from the combustibility and flammability of vapors, liquids, gases, dusts, or fibers involved.	
F160-05	C125	First aid supplies expired	1910.151(b) First aid kits shall be stocked with appropriate supplies	
F160-06	C131/C136	Fire Door blocked in open position	1910.36(a)(3) Openings into an exit must be limited. An exit is permitted to have only those openings necessary to allow access to the exit from occupied areas of the workplace, or to the exit discharge. An opening into an exit must be protected by a self-closing fire door that remains closed or automatically closes in an emergency upon the sounding of a fire alarm or employee alarm system. Each fire door, including its frame and hardware, must be listed or approved by a nationally recognized testing laboratory.	
F160-07	Panel LA	Panel Circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	

F160-08	E115	Sprinkler head interference	1910.159(c)(10) The minimum vertical clearance between sprinklers and material below shall be 18 inches	
F160-09	C133	Fire Extinguisher not mounted	1910.157(c)(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
X55-01	Back Room	Sprinkler valves blocked	NFPA 25 – Inspection of Sprinkler Systems	
X55-02	Back door	Exit door locked	1910.36(b)(4) – no locked mechanism to prevent escape while occupied.	
X55-03	Conference Room	Outlet not secured	1910.303(b)(1)(i) & NEC – Secure electrical box	
X15-01	Assembly Area	No chuck guard on drill press	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	
X15-02	Assembly Area	No chuck guard on lathe	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	
X15-03	Assembly Area	Fire Extinguisher not mounted	1910.157(c)(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury	

X15-04	Assembly Area	Exit door blocked	1910.36(d)(1) – Travel to exits shall be free of obstructions	
X15-05	Back Room	Sprinkler valves blocked	NFPA 25 – Inspection of Sprinkler Systems	
X15-06	Fire Department	Disconnect not labeled	1910.303(f) The identification shall be permanently posted for each disconnect.	
X15-07	Fire Department	Disconnect blocked	1910.303 (g)(1)(i) & (h)(3)(i) Maintain a 3-4' radius around enclosures less than or equal to 600 volts or 3-12' for enclosures greater than 600 volts	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
J20-01		Sprinkler valves blocked	NFPA 25 – Inspection of Sprinkler Systems	
J20-02	Gift Shop	Panel Blocked	1910.303 (g)(1)(i) & (h)(3)(i) Maintain a 3-4' radius around enclosures less than or equal to 600 volts or 3-12' for enclosures greater than 600 volts	
J20-03	Roof Top	Wire rope railing has excessive deflection	Best Management Practice (BMP) - The maximum deflection of the top rail when a load of 200 pounds is applied in any direction at any point on the top rail shall not exceed 3 inches in one direction which includes the free hanging sag in the wire rope	
D49-01	Overhead Storage	Overhead storage weight rating	In areas where materials are stored such as overhead mezzanines, storage racks, etc., approved load or capacity limits should be marked on plates of approved design and securely affixed in a conspicuous place in accordance with OSHA 1910.22	

D49-02	Overhead Storage	No hand rail and mid-rail at railing opening	1910.23(a)(1) – Every floor opening shall be protected by a standard railing	
D49-03	Warehouse	First aid supplies expired	1910.151(b) First aid kits shall be stocked with appropriate supplies	
D49-04	Wood Shop	No chuck guard on drill press	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	
D49-05	Wood Shop	Air for cleaning not regulated	191024(b) - To reduce the potential for injury, compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. This requirement is necessary in order to prevent a back pressure buildup in case the nozzle is obstructed or dead ended. The nozzle used for cleaning operations can include a Pressure Reducer or a relief device which will reduce the air pressure to less than 30 psi if the nozzle is obstructed. In addition, cleaning with compressed air shall only be completed with effective chip guarding and personal protective equipment. Compressed air shall not be used to clean off personnel.	
D49-06	Wood Shop	Wood Dust Build Up	In late 2007, OSHA initiated a National Emphasis Program (NEP) to address the deflagration, other fire, and explosion hazards that may exist at facilities handling combustible dust. The purpose of this NEP is to inspect facilities that generate or handle combustible dusts. During the survey, several pieces of equipment were observed with metal dust on the equipment. The build-up of combustible dust as little as 1/32" on equipment and surfaces represents a serious fire risk should a spark or other ignition source come in contact with the dust. A housekeeping plan should be developed and implemented to help ensure surfaces are free of dust.	
D49-07	Wood Shop	Greater than 75" of travel to a Fire Extinguisher	1910.157(d)(2) The employer shall distribute portable fire extinguishers for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet	
D49-08	Wood Shop	No top guard on drill press	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	

D49-09		Disconnect Blocked	1910.303 (g)(1)(i) & (h)(3)(i) Maintain a 3-4' radius around enclosures less than or equal to 600 volts or 3-12' for enclosures greater than 600 volts	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
F7-01	102	Disconnect not labeled	1910.303(f) The identification shall be permanently posted for each disconnect.	
F7-02	High Bay Area	Fire door in open position	1910.36(a)(3) Openings into an exit must be limited. An exit is permitted to have only those openings necessary to allow access to the exit from occupied areas of the workplace, or to the exit discharge. An opening into an exit must be protected by a self-closing fire door that remains closed or automatically closes in an emergency upon the sounding of a fire alarm or employee alarm system. Each fire door, including its frame and hardware, must be listed or approved by a nationally recognized testing laboratory.	
F7-03	West High Bay	Outlet not secured	1910.303(b)(1)(i) & NEC – Secure electrical box	
F7-04		No replacement sprinkler heads and valves not secured in open position	NFPA 25 – Inspection of Sprinkler Systems	
F7-05		Disconnect blocked	1910.303 (g)(1)(i) & (h)(3)(i) Maintain a 3-4' radius around enclosures less than or equal to 600 volts or 3-12' for enclosures greater than 600 volts	
F7-06	Shop	Unguarded band saw blade	1910.213(i) all portions of the blade shall be guarded except for the working portion of the blade	
F7-07	Shop	No top guard on drill press	1910.212(a)(1)- one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip-points, rotating parts, flying chips and sparks.	

F7-08	Shop	Lifting device not inspected	GDMS - No Recert tag observed for lift	
F7-09	Antenna Lab	Fire Extinguisher not mounted	1910.157(c)(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury	
F7-10		Racks not secured and under rated	1910.22(d)(1) – load limits of racking shall be posted and not exceeded	
F19-01	Office area	First aid supplies expired	1910.151(b) First aid kits shall be stocked with appropriate supplies	
F19-02	Warehouse	Racks not secured and not rated	1910.22(d)(1) – load limits of racking shall be posted and not exceeded	
F19-03	Warehouse	Forklift inspection not completed	1910.178(q)(7) – Forklift operates shall conduct pre-operation safety inspections	
F19-04	Warehouse	Damaged stair treads	1910.24(f) Treads shall be in good condition and nosing shall be nonslip.	
F19-05	Warehouse	Blocked Eye Wash and does not meet ANSI discharge requirements	1910.151 – Eye wash stations shall not be obstructed. ANSI Z358.1 - The equipment shall be capable of delivering not less than 0.4 gallons per minute for 15 minutes.	

F19-06	Dock	Exit door blocked	1910.36(d)(1) – Travel to exits shall be free of obstructions	
F19-07	Dock	Chocks or trailer restraints not provided	1910.178(m)(7) - Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor.	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
N159-01	Hanger	Forklift inspection not completed since 11 June 2009	1910.178(q)(7) – Forklift operates shall conduct pre-operation safety inspections	
N159-02	Office Area	400 Hz Panel circuits not properly labeled	1910.303(f) The identification shall be permanently posted at each branch-circuit panelboard.	
N159-03	Hanger	Oxygen and Fuel stored adjacent	1910.253(b)(4)(iii) – Oxygen and fuel cylinder shall be separated by 20-feet or a ½ hour fire resistant barrier.	
N159-04	Stair Tower	PACM Damaged	19100.1001 – 9”x9” tile in damaged conduct shall be removed if found to contain ACM	
N161-01	Conference room	Surge protectors are connected in series (Daisy chain). Potential for overload of circuit. Also creating trip hazard	1910.304(b)(4)(ii)(B) Where connected to a branch circuit supplying two or more receptacles or outlets, a receptacle may not supply a total cord- and plug-connected load in excess of the maximum specified	

N161-02	Hall	Exit path partially blocked	1910.36(d)(1) – Travel to exits shall be free of obstructions	
N161-03	Parking Lot	Walking surface damage	1910.22 – Walking surfaces shall be properly constructed and maintained	
N161-04	Office area	Dispersion pattern of sprinkler head effected by proximity to walls	1910.159(c)(1)(i) All automatic sprinkler designs used to comply with this standard shall provide the necessary discharge patterns, densities, and water flow characteristics for complete coverage in a particular workplace or zoned subdivision of the workplace.	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
H100-01	1st Floor	No box cover	1910.305(b)(2)(i) All pull boxes, junction boxes, and fittings shall be provided with covers identified for the purpose. If metal covers are used, they shall be grounded. In completed installations, each outlet box shall have a cover, faceplate, or fixture canopy. Covers of outlet boxes having holes through which flexible cord pendants pass shall be provided with bushings designed for the purpose or shall have smooth, well-rounded surfaces on which the cords may bear.	
H100-02	Mechanical Room	Valves not secured in open position & no design criteria posted	NFPA 25 – Inspection of Sprinkler Systems	
H100-03	Mechanical Room	Building ground not connected	1910.304(f)(4) – Ground shall be permanent and continuous	

H100-04	Mechanical Room	Dry wall removed creating potential for flame spread and negatively affects the integrity of the fire-safety system in the building. Replace any damaged or missing drywall	General Duty Clause – Fire Prevention	
H100-05	1st Floor	Greater than 75" of travel to a Fire Extinguisher	1910.157(d)(2) The employer shall distribute portable fire extinguishers for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet	
H100-06	1st floor and high bay area	Flammable storage cabinet open and other flammables stored outside cabinet	1910.106(e)(2)(ii)(b) – no more than 25 gallons of class IA flammable may be stored outside a rated store area or cabinet	
H100-07	High Bay	Temporary cord used vs. permanent outlet	1910.305(a)(2) & (g)(1) Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only as follows: During and for remodeling, maintenance, or repair of buildings, structures, or equipment, and similar activities; For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes; or for experimental or development work, and during emergencies.	 
H100-08	High Bay	Waste containers have been left behind from previous project	1910.141 – Sanitation All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a sanitary condition.	

Building & Number	*Location*	*Description*	*Standard Reference*	*Photographic Documentation*
E100		No findings		
F3, J17, J93		Not Accessible due to security or ACM removal		

5.5 Recommendations

The chart below lists the recommendation number and findings resulting from the VPP Gap Analysis.

VPP Gap Analysis Recommendations

WFF 09-01

Finding: Occupational Injury and Illness rate data is not being tracked on an annual basis

VPP Element: Background Information – Accident & Illness Rates

Recommendation: The Total Case Incidence Rate (TCIR) and Days Away Restricted and Transferred (DART) rate for 2005-2007 will be needed for the onsite OSHA VPP audit. Federal agencies are required to collect occupational injury and illness data, analyze this data to identify unsafe and unhealthful working conditions, and establish program priorities based on the analysis.

WFF 09-02

Finding: The Prime contractor should comply with NASA initiatives to pursue VPP Star recognition.

VPP Element: Management Commitment – Employee/Contractor Involvement

Recommendation: A plan should be developed to place contractual emphasis on achievement of VPP with the current and future Prime Contractors including: Honeywell-Near-Earth Network Sciences (NENS), Northrop Grumman IT – NASA Sounding Rocket Contract (NSROC), Lockheed Martin IT – Outsourcing Desktop Imitative for NASA (ODIN), Computer Science Corp (CSC) – Wallops Engineering Service Contract, and VT Griffin Service – Wallops Institutional Consolidated Contract (WIIC).

WFF 09-03

Finding: A review of responsibilities reveal that there are no Industrial Hygiene responsibilities listed for the Facility Director

VPP Element: Management Commitment – Responsibility

Recommendation: Develop executive level Industrial Hygiene responsibilities that will direct the future of NASA WFF Industrial Hygiene initiatives and achievement of VPP. Once

developed, continue in the same format for safety responsibilities in WFF GPR 1700.1, Occupational Safety Program and GPD 8715.1B, Safety Policy.

WFF 09-04

Finding: A review of responsibilities reveals that safety responsibilities in GPR 1700.1, Occupational Safety Program and GPD 8715.1B, Safety Policy are inconsistent.

VPP Element: Management Commitment – Responsibility

Recommendation: Develop consistent roles and responsibilities. This will help eliminate confusion and a disjointed approach to safety and health management.

WFF 09-05

Finding: A review of responsibilities reveals that safety responsibilities are not defined for Prime Contractors.

VPP Element: Management Commitment – Responsibility/Trend Analysis

Recommendation: Prime Contractors should be responsibility for the following:

- Develop, implement and maintain compliance with all applicable governmental regulations and NASA policies and procedures.
- Participate in monthly Safety Management Review meetings and present the following:
  - The status of safety and health corrective actions resulting from inspections, audits and outside agencies
  - Injury/Illness incident rates and incident summaries
  - VPP activities and progress
- Support safety through staffing, resources and priorities.
- Direct safety in the organization from the top down, to all areas of the operation.
- Actively participate in safety-related activities and report activities to NASA on an annual basis.
- Ensure that an annual Safety and Health review is completed on time and includes OSHA compliance status, injury/illness performance, trend analysis, accomplishments, and goals for the next year.

WFF 09-06

Finding: The Facility Director chairs the monthly safety management meeting established under GPR 8715.3. At the meeting standing reports are given by representatives of the Employee Safety Committee and the Contractor Safety Council. These reports also include the status of open 30 & 60-day safety work orders. In the 30 & 60 day work order report, but the responsible party for completing the open items is not listed.

VPP Element: Management Commitment – Accountability

Recommendation: A responsible party for completing the open items should be established to affix the accountability.

WFF 09-07

Finding: There is no tracking metrics established for attendance to the Executive Safety Council meetings.

VPP Element: Management Commitment – Accountability

Recommendation: A tracking metrics should be established, similar to the Contractor Safety Council attendance metrics, to hold members accountable to their organizations attendance in this important Council meeting.

WFF 09-08

Finding: The Employee Safety Committee plays a key role in achieving the WFF safety goals; however, metrics have not been established to track its progress.

VPP Element: Management Commitment - Accountability

Recommendation: Develop metrics that drive change though all areas of responsibility of the Employee Safety Committee.

WFF 09-09

Finding: Participation in the Employee Safety Committee and Contractor Safety Council is sporadic and some Codes and Contractors are missing this important meeting.

VPP Element: Management Commitment – Employee Accountability & Involvement

Recommendation: Implement actions to increase the level of participation in the Employee Safety Committee and Contractor Safety Council to ensure all Codes, functional areas and Contractors are represented each month.

WFF 09-10

Finding: There are no measurable organizational safety and health goals. Therefore, it is not clear how people are being rated and what is being evaluated during the performance review process.

VPP Element: Management Commitment - Accountability

Recommendation: Work to modify the performance review practices for safety so they connect to achievement of the organizational safety and health goals and go beyond just the achievement of non-measurable performance.

WFF 09-11

Finding: There is no one assigned to champion VPP within NASA on a full time basis. It has been assigned to individuals who already are tasked with several duties. While these persons can certainly oversee the effort, the work required as stated in this Gap Analysis, will require an individual who can focus exclusively on VPP readiness.

VPP Element: Management Commitment - Resources

Recommendation: Review the workload necessary to accomplish the VPP readiness for NASA WFF and determine what staffing will be required to have someone champion the effort.

WFF 09-12

Finding: Annual Safety goals and objectives have not been developed by trend analysis, critical review of compliance, achievement of best practices and meaningful performance metrics. Further, there are no Safety and Health goals that are shared with NASA employees and Contractors so that everyone is heading in the same direction.

VPP Element: Management Commitment – Goals & Planning/Trend Analysis

Recommendation: Re-evaluate what metrics are important to the NASA WFF so that they drive change though all areas of responsibility. Inspection of the quality of safety program elements and compliance along with facility audits will be necessary to capture systemic issues that are affecting performance and lead to a weak safety culture. Investigating which best practices can be implemented or modified to promote safe behaviors will produce quality programs and efficiency.

WFF 09-13

Finding: There are various forms of annual evaluations performed by NASA. The evaluations are performed to meet requirements within NASA but have not been directed or modified in a manner that supports a VPP effort.

VPP Element: Management Commitment – Self Evaluation/Trend Analysis

Recommendation: Use the VPP Gap Analysis to help achieve the annual self evaluation requirements. Missing from the analysis are current VPP injury/illness rates, trend analysis, 2008

accomplishments and 2010 NASA WFF Safety and Health goals. These four tasks will need to be completed by the end of January 2008.

WFF 09-14

Finding: The number of "Close Calls" submitted in 2009 indicates this program has not yet reached a point of effectiveness

VPP Element: Management Commitment – Employee Involvement

Recommendation: Develop actions to promote the Close Call process and develop and use metrics to verify improvements.

WFF 09-15

Finding: Employees are involved in safety meetings on a greatly varying level, based on the Code or Department Head. Employees are not generally included in such activities as inspections, ergonomic evaluations, training initiatives and continuous improvement teams.

VPP Element: Management Commitment – Employee Involvement

Recommendation: Each Code or Department Head should hold regular staff meetings and include safety on a monthly basis. Also, employees should be included in such activities as inspections, ergonomic evaluations, training development and continuous improvement teams.

WFF 09-16

Finding: A safety awareness campaign is not being conducted which should generally consist of "all hands" meetings and workshops focused on particular safety requirements or interest areas.

VPP Element: Management Commitment – Employee Involvement

Recommendation: Under Safety GPR 8715.6, an annual safety awareness campaign should be conducted by the Safety and Mission Assurance Branch of the WFF Safety Office to reiterate the safety policy, goals, and objectives, and to remind supervisors and employees of their safety rights and responsibilities.

WFF 09-17

Finding: There is no indication that the Performance Evaluation Profile (PEP) is being conducted on a regular basis. The data is useful for verifying success of the previous year's safety and health efforts, and for future planning

VPP Element: Management Commitment – Employee Involvement

Recommendation: The Work Center Safety Guide calls for a Performance Evaluation Profile (PEP) survey to be conducted every 12-18 months that will determine the employee perceptions of safety in each of the VPP areas.

WFF 09-18

Finding: Based on employee and supervisor interviews, employee awareness of the VPP process is limited.

VPP Element: Management Commitment – Employee Notification

Recommendation: A VPP awareness campaign should be developed which may include: NASA publications that contain safety-related articles and VPP information and billboards with safety messages.

WFF 09-19

Finding: At the completion of construction, the close out process of construction projects and building commissioning process seems to be significant opportunities for improvement.

VPP Element: Management Commitment – Employee/Contractor Safety

Recommendation: A commissioning process should be developed which may include a safety review of critical building systems and structures. The process will help affix accountability for facility safety prior to occupancy.

WFF 09-20

Finding: The existing process for the selection and approval of subcontractors is weak and varies between prime contractors.

VPP Element: Management Commitment – Contractor Safety

Recommendation: Require contractors who hire sub-contractors to submit an explanation of their evaluation and selection process for subcontractors who bid on jobs. If the process is weak, sub-contractors should be pre-approved by the construction review board.

WFF 09-21

Finding: Although immediate IH needs are being addressed, the baseline follow-up surveys are not being completed on a regular basis or being documented.

VPP Element: Worksite Analysis –Baseline Hazard Analysis

Recommendation: In accordance with the Industrial Hygiene Program, GPR 1840.2, comprehensive baseline and follow-up IH surveys shall be conducted by the IHO for all codes to establish baseline exposure levels to occupational health hazards. The frequency of follow-up surveys shall correspond to the health risk assessment rating assigned by the IHO as follows:

- Operations assigned a high risk assessment rating shall receive an annual follow-up survey;
- Operations assigned a medium risk assessment rating shall receive a follow-up survey every 2 years; and
- Operations assigned a low risk assessment rating shall receive a follow-up survey every 3 years. In addition, there is no monitoring strategy for hazards in the workplace.

WFF 09-22

Finding: A Phase II ACM survey was completed in March 2009 but labeling of positive ACM has not been completed.

VPP Element: Worksite Analysis –Baseline Hazard Analysis

Recommendation: To prevent accidental exposure to or damage to ACM, labeling of ACM should be completed. Also, the employees should receive training on the ACM management plan or locations of ACM.

WFF 09-23

Finding: Currently ergonomic evaluations for NASA employees working in administrative areas are only conducted on a request basis.

VPP Element: Worksite Analysis –Baseline Hazard Analysis

Recommendation: In order to meet VPP readiness requirements and comply with the Industrial Hygiene Program - GPR 1840.2, Health Hazard Evaluations (HHE) should be conducted. HHEs shall be performed to evaluate, monitor, and document civil service employee exposures to physical agents. This should include ergonomic hazard evaluations on a systematic basis.

WFF 09-24

Finding: Lead is only identified in a pre-construction hazardous material survey or complaint-based survey.

VPP Element: Worksite Analysis –Baseline Hazard Analysis

Recommendation: A lead management program should be established and a survey of damaged and delaminated paint be conducted. Then, a database should be established showing the areas where lead-based paint could be a concern

WFF 09-25

Finding: Mold monitoring and humidity testing is only completed if complaints are received.

VPP Element: Worksite Analysis –Baseline Hazard Analysis

Recommendation: Based on the age of the buildings, the humid climate, and number of building leaks observed, a systematic building inspections should include regular evaluations of mold hazards.

WFF 09-26

Finding: There is no heat awareness training provided to employees**.**

VPP Element: Worksite Analysis –Baseline Hazard Analysis

Recommendation: In accordance with the WFF Work Center Guide, a comprehensive baseline and follow-up IH surveys shall include evaluations for cold weather environments and heat stress.

WFF 09-27

Finding: Based on employee and supervisory interviews, JHAs are not typically updated for changes in operations.

VPP Element: Worksite Analysis – Hazard Analysis/ Analysis of Significant Changes

Recommendation: When new processes, materials, equipment, or facilities are planned; or changes to existing activities are planned; a prior use or change in service hazard analysis must be performed. When these activities affect work centers, the supervisor shall modify an existing JHA or create a new JHA for the work to be performed. JHA need to be completed and updated on an annual basis, as required by GPR 1700.1 - Occupational Safety Program

WFF 09-28

Finding: The safety office has an annual inspection process in place for the office areas occupied by NASA civil servants, but, based on the number of buildings, not all buildings are being completed each year. In addition, the close out rate on the findings is less than 50%.

VPP Element: Worksite Analysis – Self-Inspections

Recommendation: Develop a plan to ensure that all buildings are inspected on an annual basis. It is also recommended that a close out metric be developed and reported to the Facility Director to help affix accountability.

WFF 09-29

Finding: The Facility Operations Managers (FOM) quarterly inspection responsibilities are completed with varying levels of success throughout WFF.

VPP Element: Worksite Analysis – Self-Inspections

Recommendation: The Facility Operations Managers (FOM), in accordance with GPR 7320.1A - Facility System Safety, are required to complete quarterly building safety surveys, so that the entire facility is inspected on a regular basis, and to post a copy of the most recent survey prominently in the workplace. A metric should be developed to track FOM inspections and include these responsibilities in their annual performance review. The FOMs would also benefit from OSHA 10-hour outreach training.

WFF 09-30

Finding: Based on the employee and supervisory interviews, not all employees are familiar with the hazard reporting methods at WFF.

VPP Element: Worksite Analysis – Hazard Reporting System

Recommendation: Develop a communication and awareness campaign so that all employees are aware of the three major hazard reporting systems at NASA WFF including NSRS, Close Calls, and the Help Desk.

WFF 09-31

Finding: Training for incident investigation, IRIS and root cause analysis has been performed but not in a manner that ensures 100% of those who need it receive it.

VPP Element: Worksite Analysis – Accident Investigation

Recommendation: Achieve 100% training attendance for those persons requiring incident investigation, IRIS and root cause analysis. Offer this training to representatives from the Prime Contractors to ensure they are on board with how NASA WFF is managing incident investigation.

WFF 09-32

Finding: Currently, the majority of the incidents in IRIS have been open for well over 30 days.

VPP Element: Worksite Analysis – Accident Investigation/Hazard Tracking

Recommendation: In accordance with GPR 8621.3B - Mishap and Close Call Investigation Metrics should be established to help affix accountability for completing timely and accurate investigations such as:

- Elapsed time between Mishap Investigation Board (MIB), Mishap Investigation Team (MIT), and Mishap Investigation (MI) appointment and submission of report
- Percentage of reports rejected by Appointing Official
- Percentage of Corrective Actions rejected by Safety Office
- Elapsed time between appointment of MIB, MIT, and MI and Closeout Letter signature

The timeliness of completing mishap investigation and corrective actions will have to improve for VPP readiness.

WFF 09-33

Finding: There are many examples of how NASA WFF improves safety through implementation of engineering controls. Recalling these examples is difficult and there are currently no records to show much of what has been accomplished.

VPP Element: Hazard Prevention and Control – Engineering Controls

Recommendation: Establish a file of completed Engineering controls and include photos.

WFF 09-34

Finding: There are many examples of how NASA WFF improves safety through implementation of administrative controls. Recalling these examples is difficult and there are currently no records to show much of what has been accomplished.

VPP Element: Hazard Prevention and Control – Administrative Controls

Recommendation: Establish a file of completed Administrative controls and include photos.

WFF 09-35

Finding: WFF has separate Occupational Safety & Health Manual, WOSHM-2006, and WFF Work Center Safety Guide and an Occupational Safety Program (GPR 17001.1). The Work Center Safety Guide and the Occupational Safety Program (GPR 17001.1) seems redundant.

VPP Element: Hazard Prevention and Control – Work Practices Controls

Recommendation: In order to effectively manage safety, there needs to be a hierarchical system of documents that starts with the primary Safety and Health Management document. The Work Center Safety Guide and the Occupational Safety Program (GPR 17001.1) should be streamlined to avoid confusion.

WFF 09-36

Finding: The Goddard Directive Management System (GDMS) system is not set up in a manner where all NASA Safety and Health procedures can be viewed and accessed.

VPP Element: Hazard Prevention and Control – Work Practices Controls

Recommendation: The Safety and Mission Assurance web page provides an excellent location to place the Safety Management System document, all Safety Procedures and the forms that are to be used. It is recommended this be completed so that NASA employees and Contractors can reference the documents. It can also be used as an index so everyone can see an index view of the documents.

WFF 09-37

Finding: Based on inspections of WFF, the confined spaces were not labeled with a unique identifier that could be traced back the confined space listing.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Confined Spaces

Recommendation: Each confined space should be marked with a unique identification marking. This should be cross referenced to the list of confined spaces including the locations of confined spaces and entry procedures.

WFF 09-38

Finding: Based on the interviews, the Fire Department is not completely aware of their roles and responsibilities during confined space entries. The rescue procedures are critical in the CSE process; therefore, confined space training needs to include clear descriptions of roles and responsibilities.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Confined Spaces

Recommendation: Re-train rescue personnel on the expectations, procedures and permit requirements.

WFF 09-39

Finding: Based on the Industrial Hygiene Baseline report, there are areas where hearing protection is required but not identified in the Program, GPR 1820.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Hearing Conservation

Recommendation: The Hearing Conservation Program should include a list of Hearing Protection-required areas.

WFF 09-40

Finding: NASA's written Hazard Communication program is reportedly contained in GPR 1700.3 Chemical Hazard Communication Program; however, the program could not be located in GDMS.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Hazard Communication

Recommendation: A written Hazard Communication Program for employees should be developed. The program should describe how WFF will meet the Standard's requirement; list hazardous chemicals in each work area; describe methods to be utilized in advising employees of hazards in non-routine tasks and unlabeled pipes; and the method through which contractors in their workplace are to be informed of such hazards.

WFF 09-41

Finding: In several areas of the facilities surveyed, transfer containers were not labeled**.** Also during the survey, several areas appeared to have chemical inventories that have not been completed in the past year

VPP Element: Hazard Prevention and Control – Work Practices Controls – Hazard Communication

Recommendation: Complete chemical inventories on an annual basis to help ensure that all MSDSs are available and current. In addition, verify the MSDSs in the MSDS library are the manufacturers' most current version. Also, all transfer containers should be labeled. Employers must insure that containers of hazardous chemicals in their facility (except for those utilized for transfer and immediate use) be labeled or marked with the chemical's identity and appropriate hazard warning. A hazard identification system may be used instead of affixing labels to individual referenced containers. They should convey the same information regarding each stored chemical.

WFF 09-42

Finding: The LOTO program does not include identification of all energy sources and machine-specific LOTO procedures.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Electrical Safety

Recommendation: Machine Specific energy control procedures must be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in service and maintenance activities on machinery and equipment.

WFF 09-43

Finding: Standardized tags are not in place, as well as, locks that are to be used solely for the purpose of personnel protection is not prescribed.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Electrical Safety

Recommendation: Standardized locks and tags should be included as part of the Electrical Safety Program GPR 1700.7 and be utilized in practice.

WFF 09-44

Finding: There is currently no directive or instruction regarding NFPA 70E compliance for its prime contractors and affected employees. This directive should be listed in the Electrical Safety Program GPR 1700.7

VPP Element: Hazard Prevention and Control – Work Practices Controls – Electrical Safety

Recommendation: Revise the Electrical Safety instructions to include a directive or instruction regarding NFPA 70E compliance for its Prime Contractors and affected employees and so it provides instruction on Arc Flash Electrical Safety responsibilities at NASA WFF.

WFF 09-45

Finding: Powered Industrial Trucks (PIT) are operated at NASA WFF under several policies and procedures including GPR 8719.1A - Certification and Recertification of Lifting Devices and Equipment and Its Operators and GPR 8719.9, Standard for Lifting Devices and Equipment. The training, certification of operators, and inspection of equipment is also outlined in a number of different documents but safety rules for PITs could not be located.

VPP Element: Hazard Prevention and Control – Work Practices Controls – PIT

Recommendation: Develop a global Powered Industrial Equipment and Government Motor Vehicles procedure. These procedures should include a safety rules section. The single program for PITs should address: safe operation of PITs; rules and regulations; PIT loading operations; safe PIT charging/fueling procedures; pedestrian safety; operator training, operator evaluations and procedures for accident/rule violations.

WFF 09-46

Finding: NASA WFF has limited programs and rules that cover fall protection.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Fall Protection

Recommendation: A fall protection program should be established and implemented. This program should provide employees and subcontractors/subcontractor employees, with the knowledge and personal protective equipment needed to protect themselves from exposures associated with working at heights. Once developed, employees and subcontractors/subcontractor employees should be trained in these practices, and policies should be strictly enforced.

WFF 09-47

Finding: WFF has limited formal Hot Work procedures, which are briefly referenced in the Wallops Safety Manual that was last updated in 2006. The program does not address what adequate precautionary measures are or what training needs to be taken to protect personnel and property.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Hot Work

Recommendation: A Hot Work Program should be established and implemented. This program should provide employees and subcontractors/subcontractor employees, with the knowledge and personal protective equipment needed to protect themselves and property from exposures associated with welding, cutting, grinding and brazing. Once developed, employees and subcontractors/subcontractor employees should be trained in these practices, and policies should be strictly enforced. Once the Hot Work (Flame Permit) is developed, it will be necessary to update each of the Prime Contractor and include Hot Work in future audits of contractors.

WFF 09-48

Finding: Fire Protection Systems inspection and service in accordance established NFPA codes.

VPP Element: Hazard Prevention and Control – Work Practices Controls – Fire Prevention

Recommendation: For VPP purposes, the Fire Prevention/Protection Plan should specify how often fire prevention and protection systems are inspected and/or serviced. These should include:

sprinkler systems, fire alarm systems, fire extinguishers, fire pumps, fire dampers, fire doors, kitchen hood systems, emergency lighting and smoke vents. The plan should also explain where documentation can be located to demonstrate compliance.

WFF 09-49

Finding: NASA WFF has numerous documents that reference Personal Protective Equipment (PPE) requirements, including PPE requirements in the JHA. However, a single program that addresses PPE requirements is not available.

VPP Element: Hazard Prevention and Control – PPE

Recommendation: A PPE program should be established and implemented. This program should provide employees, subcontractors, and their employees with the knowledge and personal protective equipment needed to protect themselves from exposures associated with hazards in the workplace. Once developed, employees and subcontractors/subcontractor employees should be trained in these practices, and policies should be strictly enforced. In addition, a hazard assessment should be conducted to determine if hazards are present, or are likely to be present, which would necessitate the use of PPE. This is to be accomplished on a task-by-task basis, using members of the management staff and supervisors to conduct the hazard assessment. After the hazard assessment is completed, an annual review of the PPE assessment should be conducted and documented.

WFF 09-50

Finding: NASA has several Health and Safety rules that are included in the individual Safety and Health Programs and the new employee orientation. These rules should be captured in one procedure.

VPP Element: Hazard Prevention and Control – Safety Rules

Recommendation: Develop a Safety and Health Rules procedure that includes the disciplinary action for violations of rules and regulations for contractors and NASA employees.

WFF 09-51

Finding: The emergency response plan is missing essential elements necessary for compliance.

VPP Element: Hazard Prevention and Control – Emergency Preparedness

Recommendation: The WFF Safety Office is currently updating the Emergency Plan. The Plan covers fire and explosions, medical emergencies, severe weather, security, aircraft mishaps, continuing operations, launch failures/mishaps. Since the plan is in the process of being updated, recommendation will be limited to:

- The emergency escape routes, plans, and maps for each building. These should be standardized to include:
  - Identification of primary and secondary exit routes
  - Emergency evacuation procedures
  - Shelter in place procedures
  - Preferred means to report and extinguish fires
  - Phone numbers of people to be contacted for further information or assistance
- A policy should be developed on fighting incipient stage fires. If employees are expected to use extinguishers, the employees should be trained on fire extinguisher use.
- Fire drills need to be conducted and documented on an annual basis.
- The emergency alarm and sprinkler systems are maintained and tested; however, it is not inspected, tested, or maintained in accordance with NFPA 25

WFF 09-52

Finding: First Aid and AED equipment and supplies are provided in buildings; however, training is not provided.

VPP Element: Hazard Prevention and Control – Occupational Health Care.

Recommendation: It is recommended that at least two civil servants per building be trained in First Aid and emergency CPR/AED to stabilize personnel until EMS arrives.

WFF 09-53

Finding: For VPP, it is important to ensure the records that reflect the work performed are available for review in a VPP audit.

VPP Element: General Findings

Recommendation: It is necessary to ensure records and documentation are preserved and protected when people move in, out, and within the S&MA group.

WFF 09-54

Finding: Posting requirements for OSHA 1960, Basic elements for Federal Employees are currently not available for viewing in employee areas.

VPP Element: General Findings

Recommendation: Post (Rights and Responsibilities) for OSHA 1960, Basic elements for Federal Employees so it is visible to NASA WFF employees.

Our report is intended for use as a management aid. These recommendations/findings were developed from conditions observed at the time of our visit. They do not include every loss potential, violation of code, statute, or regulation, or exception to good practices, and are not a substitute for ongoing safety and health practices designed and implemented by your management. Further, no representative is made or intended that by compliance with recommendations (if any) in this report, you will be in compliance with such regulations.